

A STUDY OF PHONOLOGICAL DEVELOPMENT IN A PRIMARY SCHOOL
POPULATION OF EAST LONDON

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1971



ABSTRACT

A review of work on children's language shows that the development of language in young children is best viewed in terms of an increasing differentiation of functions, until the basic linguistic competence is established at a relatively early age - usually within the child's fourth year. After this age development proceeds in the mastery of the finer stylistic features which are contained in a child's group-language.

A study of the speech of 9-year old children shows a high degree of uniformity in phonological detail. 9-year old speech is taken as the terminal model for the developing speech of younger children in this investigation. Within the 9-year old group there are found to be phonological features which differentiate the speech of boys and of girls.

The speech of younger children is found to differ in certain characteristic ways from the mature model. Traces of earlier modes of speech are relatively persistent among children up to $4\frac{1}{2}$ years of age.

Development between 5 and 8 years consists in the acquisition of features of the local dialect, features of connected speech and, in the later stages, features of speech of the child's sex-group. The early-acquired competence is filtered through an

increasing number of phonological transformations to produce, finally, a mature performance. The mature phonemic system is acquired at an early stage, although articulation may not be completely mature until after 7 years.

A test of speech-sound discrimination produces results in favour of older children. This may be due in part to maturation of linguistic ability, and in part to the fact that older children are more sensitive to each other's speech than younger ones.

PREFACE AND ACKNOWLEDGEMENTS

This thesis is the result of work carried out between October 1967 and March 1971 under the supervision of Professor A.C.Gimson and with the assistance of the teaching and technical staff of the Phonetics Department, University College, London, and of the Headmaster, staff and children of Fordway School, Bow. To all these my thanks are due, as also to Malcolm Smith, who designed and drew the picture-cards used in the test of speech-sound discrimination, and to Mary Brodbin, who gave invaluable aid in the typing of this thesis.

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PHONETIC SYMBOLS

Phonetic Symbols employed in this study conform to usage of the International Phonetic Association, as revised in 1951. The following exceptions apply:

Vocoids

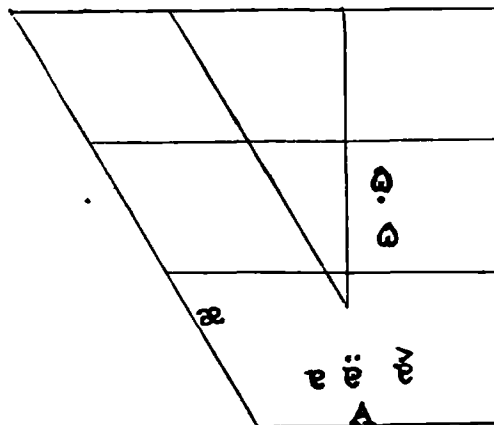
[æ] has a value below Cardinal [ɛ], but not as open as [ɐ], which is halfway between [ɛ] and [a]. Thus [ɛ] and [æ] may have the same degree of aperture, though it is suggested that a difference obtain between them in the relative tenseness and full fronting of [æ] (see III,4.3viii).

[ɐ] is taken to have a value fronted from central, between half open and open. [ɵ] is central, [ɘ] back of central.

[ɔ] has a value centralized and raised from [ɔ], i.e. [ɔ̌].

[ɔ̌] is equivalent to [ɵ].

[A] is a fully open and central vocoid.



[<] fronted vocoid [>] retracted vocoid

[_] spread lips (i.e. non-rounded vocoid)

Contoids

- [p^o, t^o, k^o] slightly aspirated plosives
- [β, b] labio-dental plosives
- [t̪, d̪] alveolo-palatal plosives
- [ɸ, ɸ̥] labio-dental fricatives with lower lip protruded
- [ʈ, ʈ̥] 'tense' alveolar fricatives
- [ʂ, ʂ̥] 'bunched-tongue' alveolar fricatives
- [ç, ʝ] velarized palatal fricatives [j] voiced palatal fricative
- [ʒ̠, ʒ̠̥], [ʒ̠̥] retracted or retroflex palato alveolar and alveolo-palatal fricatives
- [w] labio dental and rounded continuant
- [z̥, β̥, ɸ̥ etc.] voiced frictionless continuants
- [ʔ] incomplete glottal closure
- [ʔ̰] glottal 'creak' or trill
- [ʔ̰, ʔ̰̥, ʔ̰̥̥] 'spluttery' or noisy trill articulations
- [p̚, f̚, m̚ etc.] 'co-articulated' segments (synchronic articulations).
- [̤̥] phonetic syllables e.g. [n̤̥] has one articulatory position maintained throughout, but two rhythmic 'crests', separated by a rhythmic 'trough', in the voicing.
- [˘] short pause
- [ː] more noticeable break in an utterance (= /?/).
- [˚] short phonetic segment - though not necessarily non-syllabic or non-prominent
- [ɻ] ingressive voiceless glottal fricative or 'gasp'.

CHAPTER I - INTRODUCTION

1.2 Aims of the Thesis

The main body of this thesis is concerned with the phonological development of a group of children aged between 3 years 5 months and nine years 10 months. It will be seen in the second chapter that the great majority of works on child language concentrate on the acquisition of language in the early years of life, from birth to 3 or 4 years of age. The result of this emphasis has been that the phonological development of children after these early years has been relatively neglected. It is the writer's intention to show that such neglect is not justified, and that there are a number of interesting developments taking place in children's speech in the later stages of childhood.

1.2 Competence and Performance

The distinction between Competence and Performance is one basic to this study. A warning must be made at this point that the relation of competence and performance in children's language is rather different from the relationship of the two in adult language. In some respects performance is further removed from competence for the child. Although most children can be said to have mastered the complete set of potential phonemic oppositions of adult English by the age of 4 years - in other words, their phonological competence is established - yet, in adult terms, their performance falls short of their competence, in that they are unable to realize many of the features of mature articulation of the phonemes. Allophones

associated with immature articulation of certain phonemes may be found in the speech of some of the oldest children in this study. Many oppositions which may be within a child's control in isolated words may be reduced within connected speech until as late as 6 or 7 years. In other respects the child's performance seems to be closer to its underlying competence than is the case with older speakers. The young child's speech may give the impression at times of being more carefully delivered, and of being more 'correct' than older speech. Phonemes, particularly vowels, are given their full value, not reduced, elided or coalesced, and syllables are carefully enunciated. A number of features associated with rapid colloquial speech, such as the weakening of vowels or their replacement with the weak forms /ə/, /ɪ/, /u/, coalescence of consonants across syllable-boundaries and elision of syllables, are relatively late in arriving in children's speech. 'Dialectal' features connected with the less standard forms of London speech also appear at a late stage, at 5 or 6 years of age. It is suggested that competence is acquired early on, and is probably well-established for the youngest informants in this investigation. Development after this stage takes place in the maturing of articulation, and in the acquisition of the complex transformations which operate on the basic acquired competence, to produce forms of speech similar to those heard from mature speakers.

Many typical phonemic confusions are noted in the speech of the youngest informants in this study. On the basis of these observations it is found possible to outline the forms of ontogenetically

earlier, more 'primitive' phonological oppositions. In this reconstruction it is through a study of the child's performance that we are able to gain some insight into not only the child's present competence but also the way that this relatively stable state may have been attained through previous unstable stages.

2.1 Homogeneity of Speech Among the Informants

One problem facing a study of this kind is to define the relationship between the developing, relatively immature speech-forms of the youngest children and the relatively stable, mature speech of the oldest. The approach adopted here is to regard the speech of the oldest children as a terminal model, towards which all the younger speakers are developing. Underlying this approach is the assumption that there is a common linguistic environment for all the children who act as informants in this study. The grounds for this assumption are particularly ^{strong} in the case of the children at Fordway School, since both geographical and sociological evidence points to the presence of a very close-knit, homogeneous community within and around the school, among children and parents, and it would be reasonable to suppose that this homogeneity is reflected in the speech of the neighbourhood. The evidence may be presented in the following paragraphs:

1 Geographical Situation

The geographical situation of the school is best described in a report by the Inner London Education Authority (1967):

"The school is situated in Old Ford, a part of Poplar*... Its neighbourhood is rather cut off from easy contact with others nearby by the railway and two canals. It lies between Hackney Marshes and Victoria Park. Factories, small ageing terraced houses and new flats complete an environment that changes visibly year by year.

The community around the school resembles that of a small hamlet with considerable parochial pride and loyalty; indeed, people here speak of themselves as living 'in the island'. Only one road gives access."(p.1)

ii) Socio-economic Background

The socio-economic status of the families living in this neighbourhood is predominantly working-class. The fathers are skilled or unskilled manual workers. In the majority of cases, and except where there are young children under school age at home, the mothers go out to work as well. Work is found in the many factories in the district, on the railway, or, in the case of the men, on one of the many building sites where new blocks of flats are being erected. All of the children whose speech was recorded for analysis in this study came from this type of background and, as far as could be ascertained, the same was true of every child in the school at the time the study was being carried out.

iii Size of Family-units

The families in this neighbourhood are not exceptionally large, although some children come from families of five or six children. On the other hand, it is rare for a family in this district to have only one child. Of the 52 children used in the recordings, only two were found to have no brother or sister (see Appendix A)

* Though the postal address of the district is Bow, E.3., Old Ford was in the administrative district of Poplar until the formation of the borough of Tower Hamlets

More important from the point of view of a young child's language-learning is the size of the family kinship group, which as Young and Willmott (1957) have shown is not confined in east London to parents and children, but includes grandparents, cousins, aunts and uncles. In addition there is a strong feeling of community in this part of Old Ford - as the quotation from the I.L.E.A. report above, the evidence supplied by the recordings of the children themselves, and the personal experience of the staff at the school, as well as that of the writer, can testify. On an occasion such as November 5th, for instance, a number of families will co-operate in the celebrations, rather than each family remaining at home with their own fireworks (cf. 'Clifford North's Firework Night' ; Appendix B). Thus, for the child engaged in the acquisition of language, although the model of language presented by his parents and perhaps older siblings will be important in the early stages, yet very soon a wider circle of family and social relationships ensures that his language model is that of a homogeneous group, rather than that of a few individuals.

iv Continuity of the Community

There is a growing movement of families in London away from districts such as Old Ford, to be rehoused in new council flats while the rows of old, terraced houses are demolished, making way in their turn for more new flats. This involves a breaking-up of long-established communities and a fundamental change in the social composition of such neighbourhoods. However, Old Ford had been largely spared from slum-clearance operations up to the time when

this study was carried out in 1968 and 1969. Some families moved out of the district, and the school population shrank from 200 to around 150 over this period, yet this did not appear radically to alter the social composition of those who remained. Large-scale immigration into the area had not taken place, either of native English speakers from other parts of London, or of English-speaking but not native-born immigrants. Fordway School had a small minority of children of Asian origin who were not native English speakers. There were also some West Indian children, but these were mostly from families which had been in the area for some time: some of these 'West Indians' were in fact English, having been born in the district. The speech of the older ones was to all intents and purposes indistinguishable from that of the white children. In other words, a slight influx of immigrants into the area had not significantly affected the linguistic homogeneity of the community.

2.2 The Use of a Terminal Model

The speech of the oldest children in this survey is taken as the terminal model for the developing speech of the younger children. This does not imply that younger children are presumed to base their speech on a target language which has been attained by the 9-year olds. A target language is very much a hypothetical form, and to construct a target for young children in east London in the second half of the Twentieth Century one would have to take into account not only the speech of older children and adults, but also factors such as language heard on Radio and Television, and non-local forms of speech heard from teachers in school. Some way would

also have to be found of obtaining samples of the natural speech of adults to children in this community, and it might be necessary to distinguish this type of speech from the speech of adults to other adults, all of which would present some problems. It is simpler, and certainly more convenient, to assume that the target language on which today's $3\frac{1}{2}$ -year old child is basing his language-learning has not altered significantly from five years ago, and is essentially the same as that on which today's 9-year old based his learning then. The stages of development which are outlined in this work are stages through which the young child can confidently be supposed to pass in the future. At the age of 5 or 6 years, for instance, he will start to display ^{Certain key} dialectal features of Cockney in his speech; at the age of 7 years approximately he will become group-minded and receptive of the influences of his peer-group, which will further strengthen his tendency to adopt the forms of speech common to his age, sex and locality.

Once a phonological model has been constructed for the speech of the 9-year old group, a further problem is to find some means of reflecting in phonemic terms the differences between the terminal model and younger forms of speech. The discussion of the first stages of language in Chapter II shows that young children are generally considered to have phonemic systems that differ from their mature model in the number of phonological units and in the functions of these units. It might be thought desirable to be able to demonstrate such differences by adopting different phonemic transcriptions for the language of the Nursery group of children,

aged 3½ to 5 years, and for the 9-year olds. Changes in the developing system of the young child could be illustrated by changes in symbols and in the number of phonemic units. However, it was found that a transcription which used the same symbols for both forms of language did not present any real difficulty, and was probably easier to understand. It had the additional advantage of making clear relationships between Nursery characteristics and mature characteristics in such features as juncture, overlapping of phonemes, weakening of vowels, which are discussed in Chapters III to V.

3.1 The Subjects of this Study

The speech on which this study is based is that of a sample of 52 children of differing ages from Fordway School, Smeed Road, Old Ford. Both boys and girls were recorded. Their ages range from 3 years 5months to 9 years 10 months*. They may be grouped according to their class in school, these class-divisions corresponding to age-levels in so far as the youngest child in a class is older than the oldest in the class below. Their distribution is as follows:

<u>Class</u>	<u>Age-range</u>	<u>Number of Speakers</u>	<u>Boys</u>	<u>Girls</u>
Nursery	3,5 - 4,10	12	6	6
5	5,0 - 5,10	10	7	3
4	5,11 - 7,1	9	4	5
3	7,4 - 8,1	8	3	5
2 and 2X	8,2 - 9,10	16	8	8
TOTAL		55	28	27

* From this point ages of the informants will be given thus:
3,5 = 3 years 5 months

It will be seen that in classes 2 and 2X, from which the 9-year old group is drawn, there are some children only a few months over 8 years. However it is the practice in the school to move up into a higher class those children who are in the teacher's opinion advanced for their age, so that those 8-year olds in the 9-year old group are relatively mature in intellectual terms. Certain children in the younger classes , such as Paul Snellin among the 5-year olds (Class 5) and Dawn Edmeade in the class above (Class 4), ^{showed some immaturity in speech} Dawn is a twin, whose twin sister was unfortunately absent from the school at the time the recordings were made. Her speech is defective in some ways, though not in the same way as the speech of some Nursery speakers (see V, 42vi and Appendix B).

3.2 Selection of Subjects

All the children used in this survey were born in London of English parents. None was considered to have significant hearing loss. Although Robby(7,0) was subsequently discovered to have hearing loss in both ears, this was not serious enough for him to need any kind of hearing-aid. Equal numbers of boys and girls were recorded from the 9-year old and the Nursery groups. From a large Nursery class care was taken to record some of the younger and some of the older children over an age-range of 18 months. An attempt was made to obtain recordings from some of the shyer children as well as from those who obviously enjoyed the recording sessions. This proved impracticable for children under 5, though it was possible among the older children. In the case of the 5-year olds it was not possible to implement any method of selection by sex, age or personality,

since there were only ten children in Class 5, two of whom were not born in England. The eight remaining children were recorded in October 1968 and the recordings of two more boys were added in October 1969, at the time when the test of Speech-sound discrimination was being carried out.

3.3 The Recordings

Recordings were made in February 1968 and between September and November 1968, two further recordings being added in October 1969. The discrepancy between 52 children observed and 55 speakers recorded is due to the fact that three boys were recorded twice. Steven appears in the Nursery group aged 4,10 (February 1968) and in Class 5 aged 5,5 (September 1968) : David also appears at the age of 4,7 (October 1968) and 5,7 (October 1969). This was necessitated by the shortage of other children in Class 5 at the time. Clifford speaks once as an 8-year old at the age of 8,1 (February 1968) and then as a 9-year old, when he is in fact 8,10 (October 1968). We distinguish these two appearances of each child by 'Steven' and 'Steven II', 'David' and 'David II', and 'Clifford I' and 'Clifford'.

The aim was to record approximately 50 utterances from at least ten children at each age level. The sixteen recordings obtained from the 9-year olds were all of a relatively good quality. Recordings of younger children were beset by a number of difficulties, including a high level of noise from factories around the school and from within the school itself, and the relatively indistinct nature of

the speech of some subjects. In the Nursery group, for example, Paula and Denise were very indistinct during most of their recording, or were shouted down by a third girl, Fern. Where their speech was audible and of interest it has been transcribed, but since between them they did not contribute 50 utterances their utterances have been regarded, along with other Nursery girls who contributed only a few audible utterances, as only one 'composite' speaker.

The children were recorded in twos or threes; as far as possible children who were friends or of the same sex were chosen to be recorded together. In this way, it was hoped, speech would come more easily and be less restrained than in a formal 'interview' situation. Some recordings were very successful in these terms, with children talking together spontaneously, with little apparent self-consciousness. In some cases children tended to show off, which provided some interesting examples of both formal and exaggeratedly informal or dialectal styles of speech. The subjects talked about home and school, events such as Firework Night and Christmas, or repeated stories such as Cinderella or the Three Pigs. Where unprompted conversation failed, books and pictures were used to elicit speech.

4. Equipment

The equipment used consisted of a Stellaphone 459/00 tape-recorder together with a simple mono microphone as supplied with the set. The tapes used were BASF long-play, provided by University College

Phonetics Department. Recorded speech was subjected to a narrow allophonic transcription, using a modified form of the International Phonetic Alphabet (see 'Symbols', pp 7-8).

For the test of speech-sound discrimination described in Chapter VI the same equipment was employed, with the addition of two pairs of headphones - Sharpe HA 10 - and a set of picture-cards designed for the test, some of which are reproduced in Appendix D.

CHAPTER II - PREVIOUS WORK ON CHILDREN'S LANGUAGE*

1.1 A Theory of Language Development

- (i) Much recent work in the study of first language learning tends to support the view that a capacity for language is innate in healthy human beings, and that its appearance can be predicted as part of the normal development of any child, given the right environment. As Chomsky has pointed out in his review of Skinner's 'Verbal Behaviour' (1959) and subsequently (Chomsky and Halle 1968, p.4), language learning cannot be explained solely or chiefly in terms of habit, of generalization from earlier experience, or of operant conditioning reinforced by others' responses (though these factors do have some part to play in ^{language learning} ~~the acquisition of language~~), or in terms of any other significant concept of psychology. None of these explanations can account for the fact that in the earliest stages, and indeed at every stage of language acquisition, much of what the child hears from other speakers he has never heard before, and most of what he produces he has never produced before. Ervin (1966) sees that children learn a great many grammatical structures which are never actually 'taught' to them, and which teachers actually discourage (p.163). The basis of Lenneberg's (1967) theory of language is that it is a function of species-specific properties, and that the 'latent structure' or language potential that is replicated within every human being determines the underlying structures, and the limits to these structures, of all the languages of the world (p. 374 - 7). To Lenneberg the acquisition and the progress of the individual's language is a function of his

* In this chapter phonetic and phonemic representations are given in authors' original forms, except where there is an exact correspondence with items used in this study.

or her cerebral maturity rather than, for example, skill in a motor activity such as articulation. He notes that the onset of language cannot take place until the brain has reached a certain level of electro-physical maturity - usually between 18 months and 2 years (p. 117) - and that no amount of intensive training can produce a higher stage of language development in the child in advance of the appropriate age, at any point of progress (p. 178). All that training can do is to compensate for deprivations in the language background that may have been experienced at earlier ages. Thus children who spent their early childhood in institutions will usually be found to be lagging behind other children of the same age from normal homes in linguistic achievement, but specialized adult attention and a change of environment almost invariably produces an improvement in their performance (p. 136, and Lewis 1963, pp. 113-4). Lenneberg sees in language development four factors that are typical of maturationally controlled behaviour: firstly, environmental stimulation remains constant throughout the critical period of language growth, but different use is made of it at different stages; Secondly, there are signs of the emergence of behaviour in whole or in part before it is of any use; thirdly, there is evidence that the beginnings of such behaviour are not the result of goal-directed practice; the fourth and perhaps most striking characteristic is the regularity of the sequence in which the milestones of various forms of behaviour appear. Thus in the linguistic progress of mongols, which is in no way abnormal but only

a slowed-down version of normal language development, the delayed appearance of milestones such as the onset of speech, the stage of primitive sentences and so on, are matched almost perfectly by similar delayed appearances of motor milestones, such as walking, running and other activities calling for muscular and neural co-ordination (p. 126, pp. 309 - 320).

ii Development through Differentiation

Every function in the mature individual, then, is derivative of embryologically earlier types of function. The basic process in the development of linguistic categories, in semantic development and in phonological development, as in visual discrimination and motor activities, is one of differentiation. McCarthy (1954) refers to the theory that motor development proceeds from mass activity through the control of gross muscles to the finer muscular movements (p. 512), and that of behavioural development as the progressive differentiation of original mass activity (p. 515). A progression from large simple units and gross contrasts to more differentiated classes and a more elaborate structure is found at the phonological level in Jakobson's (1949, 1968) description of the development of the child's phonemic system as a progressive splitting of phonemes into further oppositions of features. Jakobson and Halle (1956) suggest that the dichotomous scale may be an integral part of the phonological structure of languages (p. 47) embodied in the distinctive feature approach. On the level of syntax, Brown and Bellugi (1966) describe children's early grammars

in terms of a small group of modifiers and a large group of nouns. Then the first differentiations within the grammars take place in the group of modifiers, which split into smaller classes with more restricted function, while nouns are later differentiated into singular and plural, and into classes such as mass nouns, count nouns, and so on (p. 151 - 160). They remark that the evolution of the Noun Phrase within the child's system, with its simultaneous differentiation and integration, is more reminiscent of the biological development of the embryo than of the acquisition of a conditioned reflex (p. 161). Vigotsky (1962) views the great change that comes about in children between 1½ and 2 years as the emergence of language from other forms of signal behaviour - again a differentiation of a mass activity into functionally distinct forms of behaviour. Lenneberg notes that early utterances are composed not of a conjunction of independent items, but as a whole tonal pattern which is differentiated later into component parts (p. 279). Similarly the development of phrase-structuring and the phrase-marker system is by means of differentiation in grammatical categories. Differentiation of classes accompanies elaboration of structure, and the two are adaptations of the categorization process which is the cognitive function underlying language (p. 294).

McNeill (1966) is able to relate these processes to Chomsky's hierarchy of categories: to him, the basic divisions of categories in child language are congruent to the Substantive Universals of adult grammar, while the early rules that operate in child grammars such as those described by Brown and Ervin correspond to the Formal Universals of adult grammars of all languages (p. 32 - 51).

iii Necessary Sequences in Language Acquisition

Miller and Ervin (1964) discuss the possible existence of a necessary sequence of acquisition of skills in grammar:

'The relation between the topic of mastery of skills may consist of co-occurrence or of necessary sequence. Sequential orders may arise either because one skill is dependent on the prior acquisition of another, because one is less practised, or because they differ in difficulty though are practised equally. Many of the sequential findings of a normative sort have the third property'. (p.31)

They go on to observe that in the child's formation of rules for the construction of noun plurals, plurals of nouns ending in affricates and sibilants - "bridges", "busses" - invariably appear after plurals of nouns ending in plosives or vowels - "cats", "flies". (p.32-4). Brown and Fraser (1964) also point to an invariable dependence in the relationship between the mean length of a sentence that a child produces and the type of morpheme that is omitted in the child's 'telegraphic' reduction of adult sentences. A child whose mean sentence length is below 3.5 morphemes invariably omits modal auxiliaries such as "will", "can", and can be expected to reduce a sentence such as "Daddy will come" to "Daddy come" (p.74). Here it does seem that some skills are dependent on the prior acquisition of others. With McNeill's hypothesis that grammatical classes are created in single steps down the hierarchy of categories (p 34) it will be obvious that a distinction between demonstrative and possessive pronouns, for example, cannot take place until the differentiation between nouns and pronouns has taken place. Perhaps the most clear-cut dependencies so far established

in developing language are those observed by Jakobson (1949) in his 'irreversible solidarities' between phonemes as they are acquired in the child's phonological system. An irreversible solidarity exists between dental and velar consonants, such that velars can never appear in a phonemic system until the dentals of the same series have appeared. Fricatives at a given place of articulation may not appear until the plosives at the same place have appeared. Rounded palatal or unrounded velar vowels are never found before the unrounded palatal or rounded velar vowels at the same degree of closure(p. 319 - 321).

iv The Learning of Structure

The whole process of language-learning can be expressed in terms of progression from the formless, undifferentiated and chaotic towards the highly structured, orderly system which is the mature speaker's competence, and the grammar which turns this competence into speech. At every stage in the progression it seems likely that the underlying systematization of language goes beyond what the speaker actually produces. Chomsky's (1964) formal discussion of Miller and Ervin's paper points this out, and criticizes the type of child grammar that takes upon itself only the explanation of observed behaviour without exploring in sufficient depth the patterning lying beneath (p. 35). We may quote at length here from Lenneberg (1964)

"A sentence of ten words contains an enormous amount of detail. It might consist of a sequence of some 60 phonemes, each one characterized by nine to twelve distinctive features; each word in the sentence has well-defined intonation and stress characteristics; the sentence as a whole is the product of a

male or female organ and bears acoustic peculiarities of age and idiosyncracies of the speaker. 'Blind' reproduction of all of this material, or even that of the essentials, should be impossible, seeing that our memory is not even capable of reproducing a train of ten random digits. Reproducing sentences in a totally unfamiliar language is difficult or even impossible because the sequence of phonemes strikes us as random. But when we understand a language, sequences of phonemes within words and of words within sentences fall into familiar patterns that help us to organize the stimuli and enable us to program the responses..... as we receive the input signal(a long sentence) we are capable of recoding the material in terms of a few principles, words, and their connections. We can now store this coded information, which is simpler to do than storing the original, detailed information. When we are asked to reproduce the sentence, we reconstruct it by means of our knowledge of a few relevant rules. The output signal is now 'our own way of saying what we heard', and is similar to the original only in terms of structural principles - not in phonological detail." (p. 123)

At some stages of development, obviously, the child has not progressed sufficiently to be able to encode what he hears: at a later stage he may be able to understand the 'input' but is still unable to reproduce it in the complex adult form. Instead he reproduces it in terms of his own level of code. He will repeat a sentence like "The man was bitten by the dog" as "The dog bited the man". The alteration in word-order indicates that he understands the underlying structure without being able to put into operation the passive transformation. Similarly what Brown calls 'telegraphic' speech is a reduction of adult speech in a systematic way so that it can be

handled by the child at his own level of complexity. The child's initial lack of concern for phonetic or syntactic accuracy indicates a deeper concern with structure.

v Children's "Mistakes"

Most of the works on children's grammar attest to the amount of information that can be gained from studying children's characteristic deviations from adult usage in grammar. Miller and Ervin (1964), Ervin (1966), Brown and Bellugi (1966), Brown and Fraser (1964) all point out that most inflectional "mistakes" in syntax can be classified either as omission of morphemes (as in telegraphic speech), or as overgeneralization of morphophonemic rules. When a child says "foots" for "feet" or "mans" for "men" we know that he has just recently formulated the rule for making plurals by adding the morpheme -s , but has not yet reached the stage of distinguishing regular and irregular paradigms. Similarly when we come across "goed" or "builded" we may deduce that he has mastered a rule for forming the past tense of verbs, but is again as yet unable to differentiate regular and irregular instances. It is by analogy that the child builds up classes and constructs rules. As Brown and Fraser (1964) observe:

"By smoothing the language into a simpler system than it is, the child reveals his tendency to induce rules."(p. 45)

Ervin (1966) notes that it takes relatively few instances and little practice in new rules before analogic extensions occur (op. 178 - 9). Quite often, irregular plurals and irregular past tenses are learnt

item by item, but after the child has started to use the regular inflected form it is soon extended to these as well as other cases (p. 178). There may, however, be a time-lag between the learning of a new word and the application to it of analogic inflections (p. 174).

vi Irregularity of Progress

At all levels, language progress consists of continuous movement between steady and unstable states, until in the early teens a final stage of language maturity is reached. This final state is not associated, for Lenneberg (1966), with complete maturity of language for most speakers, but with a stable condition of the brain, not allowing for any further re-organization of linguistic patterns (p. 158). Progress in language is never regular; it may proceed at a rapid rate for some periods while at others very little seems to be happening. Development in language may be slowed down while motor activities are mastered, and will then proceed rapidly to reach a stage appropriate to the child's mental age (McCarthy 1954, p. 527). Nor do the stages in development all unfold with equal regularity or in clearly defined stages. Brown and Bellugi (1966), for example, in a study of the child's development of pronouns, observed an overlap period when both the pronoun and the noun it should be replacing appear together : "Saw it ball" (p. 160).

1.2 The Role of Imitation in Language Acquisition

- i That language is not entirely instinctive, and that children must have some model of language at hand in order to develop language of their own, should be obvious; though when, in 1797, the wild boy of Aveyron was brought to Paris, there were those who expected to hear from him mankind's original language - which was widely assumed to be Hebrew - and were disappointed by the inarticulate grunts that they did hear. Jakobson (1968) cites a case, reported by Saareste, of three children who were isolated on an Estonian farm without adult company during their critical pre-teen years, and whose language was as a result 'frozen' in the stages of early childhood (p. 15). These and other cases of language deprivation mentioned by Brown (1958) give clear proof that in language as in other forms of behaviour man is very much dependent on his physical and social environment. It is perhaps misleading to use the term 'imitation' in connection with children's speech, suggesting as the word does mimicry that is both uncomprehending and perhaps^{un}conscious - what Grégoire calls "le psittacisme". It may be possible to talk of this type of imitation only with the child's onomatopoeic attempts to reproduce sounds from the natural world, such as the chiming of bells or the crowing of a cock (though even this might be doubtful: see 4.2.11 below). Where speech is concerned, however, the process of drawing on adult models seems to be largely unconscious. It is more a case of absorbing influences from the various sources of language around the child. In Lenneberg's (1967) terms, the social setting is a 'resonance' which excites the 'resonator' that is the child's cognitive channels. The

latent structure, or Language Acquisition Device (McNeill, p.38) works on the material at hand, and the actualization process finally produces realized structure (Lenneberg, p. 378). The process seems to start early; in the second half of its first year the child is probably already showing influences of its linguistic environment. Grégoire (1937) noticed that his son at an early age seemed to have intonations and an articulatory setting in his babbling that were characteristic of mature French, before he could be said to be at the stage of first words (p. 103). Weir (1966) reports that at six months the babbling of Chinese children is distinguishable to observers from that of American and Arabic children and, in another study, from that of American and Russian children. The vocalizations of the Chinese took the form of mainly vocoidal monosyllables with considerable variation of tone upon the syllable. The babbling of the 'Western' children, on the other hand, showed a syllabic structure 'of the CV type', and intonation patterns which covered sequences of syllables (p. 55-56). The babbling of this period, before the stage of first words, may also sound like adult speech. In studies by Western writers are found many reports of babbled utterances in which the intonation and pitch-pattern of adult sentences are accurately reproduced both in the type of intonation - question, contradiction, exclamation and so on - and in the number of syllables, but without any of the phonetic form of the original (Grégoire 1937, p. 60; Lenneberg 1967, p. 131; Grewel 1959, p. 198). Holmes (1927) noticed that some of his daughter's

early words which were imitated from her parents were very clearly and accurately produced, but these accurate articulations were later either lost or replaced by 'vastly inferior utterances' in the child's spontaneous speech (p. 220). Here we may perhaps speak of ^{part} direct imitation, and should notice that it does not play an important role in the child's learning of phonetic forms in any obvious or straightforward way. Fry (1966) stresses the role of imitation in the acquisition of the phonological system, maintaining that it is more significant and more apparent in this field than in the acquisition of grammar since the child's pronunciation is clearly similar to that of its adult model (p. 191). Here again it is useful to separate direct imitation from 'acquired' similarity. A French child has a system of unaspirated voiceless stops and an English child a system of aspirated voiceless stops not so much because they are imitating their respective adult models as because they have acquired or extrapolated the features of "no aspiration" or "aspiration" from the material at hand. In phonology as in grammar it is only after a progress through successive developmental stages that the child begins to sound like those around him, acquiring superficial or stylistic features as opposed to deep structural oppositions. Métraux (1950) records that at 4½ years sociable girls typically sound 'in inflection' like their mother or some female with whom they spend a lot of time (p. 51). It is probably fair to call this a case of imitation, but again the fact that it has become noticeable only after 4½ years indicates that direct imitation is not the main reason for the likeness.

11 Reductions of Adult Speech

There are numerous occasions when the child attempts to imitate directly the speech of adults, with varying degrees of success. These attempts offer some insight into the lines along which his coding develops. Brown and Fraser (1964), Brown and Bellugi (1966) and Ervin (1966) studied what happens to a child's attempts to imitate, and found certain characteristics common to all children. First of all there is a strict limitation on the length of utterance they can produce in these imitations. This may have something to do with memory-span; the number of morphemes we can carry in our minds increases as we grow older though the limitation is of course never completely lifted. It has probably also something to do with the level of complexity which the child's coding has reached. At 2 to 2½ years, the age of most of Brown's and Ervin's subjects, the number of morphemes that a child can reproduce in a sentence is between two and four. Furthermore, the morphemes that are omitted and those which are retained from the original adult sentence are always of the same type. A child whose mean sentence length is less than 3.2 morphemes will invariably omit the auxiliary verb in present continuous constructions : "I going", instead of "I am going". The child with mean sentence length of less than 3.5 always omits the "will" from future constructions (Brown and Fraser, p. 74). This is aptly named 'telegraphic' speech. The word-order is the same as in the adult original, and the child's reduced sentence could be given correct grammatical form by the restoration of the missing

morphemes. The elements that are retained are always high information bearing words or 'contentives'. They are stressed, are relatively unpredictable from the context, are usually in the last part of the original adult sentence, and belong predominantly to the classes of nouns, main verbs and adjectives. Forms most commonly omitted are those which are weakly stressed, are in intermediate positions in the sentence, and are relatively predictable from the context. They are not reference-making forms, and fall into the class of 'functors' articles, prepositions, auxiliary verbs and inflections. Brown and Fraser conclude:

"In general, it appears that children whose speech is not yet English are using grammars which are systematic derivatives of adult grammar and that the particular features of the derivative grammar are predictable from the mean sentence length."(p. 74)

The grammar operating in children's spontaneous speech is essentially the same as that governing these reductions. There are many examples of children's sentences that cannot be expanded into adult-type sentences because they show a different word-order, such as "allgone shoe", "allgone lettuce", "Baby other bite ballon no" from Brown's material. Yet although they cannot be explained in terms of imitation, the grammars operating in such sentences are still systematically related to adult grammar. McNeill (1966) considers the accounts of child grammar given by Ervin and Brown and their co-workers. Both explain these early sentences as being composed of words drawn from two classes - one 'open' class, containing a large number of words, and one that McNeill calls the 'pivot'

class, Brown calls the 'modifier' class, and Ervin the 'operator' class. The composition of these classes is heterogeneous from the point of view of adult grammar, but this first division into two classes and later into further syntactic categories, more homogeneously composed, are the first stages in the differentiation of classes that will lead the child ultimately to a mature grammatical model. McNeill's hypothesis that these first divisions correspond to the divisions operating at a deep level in the hierarchy of categories relates these grammars to adult language in a striking way. Children's early syntactic classes honour the basic distinctions, though not as yet the more subtle distinctions, operating in adult classes (p. 32 - 39). In the same way the grammatical relations that the child employs in his primitive sentence-generating rules are the basic grammatical relations of adult, and of all types of human grammar. They are the relations:

Subject of a Sentence - Predicate of a Sentence

Main verb of a Sentence - Object of the Main Verb

Modifier of a Noun Phrase - Head of the Noun Phrase

The child's sentence-generating rules, embodying the e relations, are of two main types, creating what are roughly equivalent to the Noun Phrase and the Predicate Phrase, the two units that go to make up the adult 'well-formed sentence'. These rules correspond to the Formal Universals (p. 40 - 50) in the same way as the child's first syntactic classes correspond to the Substantive Universals. Imitation can not account for the formation of rules of this type, and we have to return again to the idea of an innate language

capacity. The role of adult language to McNeill is essentially directional, providing at each point of change in the child's development a pointer to the lines along which the next stage of language should travel(p.65).

iii The Role of Adult Language

Brown and Bellugi (1966) point to a process in adult speech to children, paralleling the child's imitations of their speech. This is 'imitation with expansion'. In other words, when a child addresses one of his reduced sentences to an adult it appears to be an almost automatic reaction on the adult's part to fill in the missing forms and produce a grammatical sentence:

Child; "Papa name Papa"

Adult; "Yes, Papa's name is Papa" (p. 143-8)

This raises a question of how important the type of language may be that the child hears from adults. Most forms of adult speech to young children consist of a very stylized, simplified and repetitious dialect. It may be that this is very necessary for a child in his early stages if he is to acquire the bases of syntax. (Brown and Bellugi, p. 136). It is possible that the amount of expansion of child sentences that adults can give is also significant. Ervin (1966) has shown that new forms of syntax are never learned by the child directly from imitations(p. 172). However, Miller and Ervin(1964) present a case where an adult expansion of a child's utterance led to a more advanced utterance than the child's original sentence:

Child; "ook read, b ok r d"

Child; "Book read, book read"

Adult; "You want me to read a book? OK."

Child; "Read book" (p. 13)

Slobin (1966a, p. 86) finds that in imitations-of-expansions of this type the child's second utterance is grammatically more advanced than his original utterance in 50% of cases.

The influence of adults and older siblings is felt in other ways. Ervin (1966) proposes that a continual expansion of comprehension of the adult model is one of the sources of change in child syntax (p. 187), and all the studies of child grammar mentioned so far observe that it is necessary for a child first to understand a contrast in adult speech before it may be used in his own utterances. Miller and Ervin (1964, p. 23) and Jenkins and Palermo (1964, p. 162) point out the reinforcing effect that adult approval has in strengthening the force of children's constructions that coincide with the adult model. Whetnall and Fry (1964) make a similar point in relation to the child's phonological productions (p. 80). Similarly forms that have no parallel in the adult model tend to drop out of use through negative reinforcement. Grégoire (1937) remarks that a number of words in the child's vocabulary are his own coinages that are only abandoned because of the refusal of other speakers to confirm their use (p. 236). Ingram (1968a), Higgs (196), Hutcheson (1968) see the child's developing skill in articulation as a progressive increase in the number of features of the mature system that are brought under the control of the developing

speaker. At all stages the presence of a target model is essential if the child's language is to continue to develop. Grewel (1959) puts forward the hypothesis that there is a biological instinct in mothers, which leads them to use only soothing and restful speech to the baby, avoiding strong dynamic accents. She contrasts speech addressed to a young baby with the sharper, more forceful prohibitive tone used with a four-year old (p. 197) Her suggestion is that adult language to children evolves just as children's language evolves. This is very probable, though biological principles need not be invoked to explain it. Nor is this evolution as significant to children's language as Grewel would suggest. From the evidence available it would not seem that any one factor is of dominating importance in the language that children hear from adults, so long as he has around him an environment in which language models are readily available. Here is Chomsky (1959) on the subject:

"it is simply not true that children can learn language only through 'meticulous care' on the part of the adults who shape their verbal repertoire through careful differential reinforcement, though it may be that such is the custom in academic families. It is a common observation that a young child of immigrant parents may learn a second language in the streets, from other children, with amazing rapidity, and that his speech may be completely fluent and correct to the last allophone, while the subtleties that become second nature to the child may elude his parents, despite high motivation and continual practice." (p. 42)

iv The Role of Peer-group Language

The linguistic environment of the child is influential not only in the first years of life, but also at the later stages when, as Chomsky suggests, the child begins to adopt forms of a language 'of the street'; when, in other words, stylistic features of the speech of the child's locality begin to influence the child's speech. There is a paradox in the fact that the child learning to speak rarely 'sounds like' his parents in surface features of language yet at a later stage his speech comes to sound very like that of other children, a group of individuals to whom he is apparently less closely attached than to his parents, and in many respects far less important to his development. Several reasons can be advanced for this phenomenon. In infancy it is the learning of structure that takes priority for the child; it may be that the basic system underlying language must be acquired before the child can turn his attention to details and subtleties. During infancy too the child has probably little motivation to sound exactly like those around him. Adults understand him, making special efforts initially to interpret his utterances, and they make allowance for his relative inexperience in language. As long as he can make his needs felt there is no necessity for greater similarity to his model. In any case, he is partly unaware at this time that there is any difference between what he utters and what he hears. It is some time before the child becomes aware of an individual existence separate from his parents. Stern notes, for instance the relative late appearance of "I" in children's language, considering its importance when it does finally

appear (1924, p. 157). Piaget (1926) maintains that up to the age of 6 or 7 years when imitation does take place in various aspects of behaviour it is the result of confusion of the 'I' and the 'non-I' (p. 11 - 12). After this age the child grows increasingly aware of his own identity, and it is through the agency of social groups - most important of which is the peer-group - that this awareness is fostered (Lewis 1963, p. 167-8; Campbell 1964, p.307). The child feels a strong desire to belong to the group, finding that conformity with its norms is a source of strength. It is probably inevitable that speech should be subject to this movement to conformity. The pressure to conform is reinforced by children's low degree of tolerance of linguistic deviations relative to the tolerance that the child found from his parents. The child is still unaware of directly imitating a model, yet this is what he is doing. His recently-acquired facility in both the perception and articulation of speech-sounds is put to use very effectively in the rapid mastery of the finer points of the peer-group dialect, whether it is similar to the language that he has learnt from his parents or not.

2. Factors Influencing Language Acquisition

This discussion has so far been concerned with the growth of language in a general way, without regard to the great amount of variation that is found between one child and another in the course of development. Attention should now be turned, therefore, to some of the factors which might be thought to hinder or encourage children's language acquisition. It will be found that all the evidence points to a strong tendency in young humans to develop language, even in the face of severe obstacles.

2.1 Hearing Loss

The most obvious obstacle to language learning is that which occurs in various types of hearing loss, language depending as it does so heavily on hearing. Though this is not the place to go into a detailed investigation of the literature of deafness, some allusion can be made to the work of Whetnall and Fry (1964), who have shown that even children with quite severe hearing loss can develop effective speech if they have sufficient opportunity of hearing speech and making good use of their residual hearing (p. 14 - 31). Some mention can also be made of the case of Helen Keller, a most extreme case of disability. Though deaf and blind, and without specialized adult attention until her seventh year, she learnt to speak by means of the finger alphabet. Once she had started to use this method of speech, it is interesting to note that she went through exactly the same stages of speech as normal children do, though in a much compressed time-scale (Stern 1924, p.157)

2.2 Physical and Physiological Factors

A child may suffer considerable brain damage and still develop speech, even though the speech areas in the left hemisphere are affected. If there are large lesions in these areas, the whole speech apparatus may be shifted to the right hemisphere (Benfield and Roberts 1959, p. 198). Aphasias that have been overcome by the age of 10 usually leave no trace, whereas over this age if an aphasia lasts more than 5 months recovery from it is never complete (Lenneberg 1967, p. 143 - 150).

Some other physical and physiological factors ^ewere considered in relation to speech in children by Morley (1957) in connexion with the 'Survey of 1,000 families' in Newcastle-upon-Tyne. She found no evidence of influence on the early stages of speech from fits, tonsils, adenoids, squints, premature birth or papular urticaria, though there was some correlation of delayed speech onset with enuresis and acute otitis (p. 54). Ambidexterity or cross-laterality was associated with difficulties in speaking and reading, and left-handedness with stammering and developmental dysarthria (p. 391 - 400). This was perhaps due to the presence of cases of early brain-damage, where the functions of speech and with them cerebral dominance had shifted from the left to the right hemisphere, producing left-handedness or cross-laterality together with some speech disorder (p. 198). Wellman, Case, Mengert and Bradbury (1931) found no correlation between articulatory ability in children and height or sitting height, though there were

correlations between weight-height index and articulatory abilities on consonants and consonant clusters (p. 72-3). Another physical factor that has some bearing on speech-sound articulation is the presence of teeth, a point made by McCarthy (1954, p. 513).

2.3 Mental Capacity

On the intellectual level language in the early stages seems to be largely independent of intelligence. Irwin (1957) concluded that speech sound development in the first twenty months at least is not correlated with measured I.Q.) (p. 419). Lenneberg (1967) concludes from the study of mongols and mentally retarded cases that there is a certain I.Q. threshold value that varies with age and that must be attained for language to be acquired. It is noteworthy, however, that this threshold is relatively low (p. 311). McCarthy (1954) reviews a number of studies on child development, and has this to say about the relation between I.Q. and linguistic ability at later stages:

"There are differences in intellectual status paralleling the differences in linguistic development, there being slight superiority of girls over boys, of singletons as compared with twins, and of children from upper socio-economic level as compared with the lower. This brings up a very interesting problem to which there are not sufficient data for a final answer, namely, whether the more precocious development of language among these groups is due to their greater intelligence endowment or whether their higher scores on the intelligence tests, which are chiefly verbal in nature, are due to the more precocious linguistic development" (p. 598)

Perhaps more significant to the growth of language is the concept of 'mental age', related to but not dependent on intelligence test scores. It is this measure of maturity, rather than the child's chronological age, which determines his degree of linguistic attainment. Descoedres (1930) attempted to establish a scale of mental age by the use of language tests such as the naming of opposites, of parts of the body, knowledge of the environment and so on. Ingram's work on children's articulation embodies this approach. Research undertaken at the Department of Child Life and Health, Edinburgh, has resulted in a test which can be used to assign each child tested an 'articulation age', to be compared with the child's chronological age. Not only does this establish norms for each of the stages on the way to a mature articulation, but it also enables the tester to determine whether an apparently 'defective' articulation represents a normal developmental form, typical of an early stage of articulation, or whether it is a genuine case of a deviant articulation requiring specialized attention.

2.4 Motor Control

Articulation is as subject to maturation as any other aspect of language. There is the additional consideration, however, of motor control in the child's mastery of the fine muscular movements involved in some consonant clusters. This has led investigators to seek some kind of relationship between general motor ability and articulatory ability in children. McCarthy (1954) reports the finding of Bilto (1941) that a group of 90 speech-defective cases were inferior on three sets of motor-ability tasks to normal-speaking

children, and a study by Shirley (1933) who found a moderate positive correlation between fine motor co-ordinations and language development after 45 weeks of age (p. 598). One of the factors that Poole (1934) considered of consequence in the production of sounds was motor-exercise (p. 161). Wellman et al (1931) also found substantial relationship between the results of a motor-control test and the number of consonant clusters successfully produced by the children studied (p. 73).

However, it would be a mistake to place too much emphasis on the part that motor-control and muscular co-ordination play in articulation. Firstly, a number of studies have confirmed a strong connection between articulatory defects and defective auditory discrimination of speech: that is, confusion between sounds in production, or failure to produce the accepted phonetic norms for speech-sounds, is a reflection of confusion of sounds in the speaker's perception just as much as a result of uncontrolled movements in the vocal tract (Cf. Sheridan, 1945; Prins, 1962a and b; Reid 1947; Spriestersbach and Curtis 1957; Travis and Rasmus 1931; whose work is discussed in ¹¹¹5.2₁ below). Secondly, as numerous reports of the first year of life attest, the infant very quickly displays a mastery of a great many articulatory movements that adults do not use in speech, as well as most of the movements that they do use, well before the stage of first words. The infant obviously has good muscular control at this time, yet when he starts to attempt more meaningful utterance, this diversity of sound is suddenly and drastically curtailed. There may even be a period

of complete silence between the cessation of babbling and the onset of true speech (Jakobson 1949, p. 318). Liberman (1957) has suggested that articulatory mediation may be supposed to help in the early stages in getting auditory stimuli attached to the appropriate articulatory responses (p. 122). One is to imagine, presumably, the child hearing a sound and responding by saying it aloud at first, then later to himself, perhaps unconsciously, when an association between sound and articulatory movement has been well established. This suggests that the child is a very conscious imitator, aiming to reproduce his adult "informant's" segments in the manner of a phonetician learning an unfamiliar language. Though this process may be involved in the learning of articulation at certain stages - perhaps in second language learning in the adult - yet it seems more likely that the reverse process is the case in first language learning, and that it is the sound that the child hears when making the articulation that reinforces the articulatory movement. Once the 'auditory feed-back loop' (Fry, 1964, p. 78) is established it is quite possible that both processes are involved. The first stage in the child's acquisition of a phoneme is the understanding of an opposition or the discrimination of two features that are in contrast. Only after what may be quite a long interval does he attempt to use the phoneme in situations where it is in contrastive opposition with other phonemes. If a child cannot distinguish between two sounds that his ear receives as input - a /d/ and a /g/, for example - then he is not likely to be able to respond to them with two consistently differing articulations. If

he can hear the difference, even though his articulation may not yet be at the mature stage, he is more likely to produce two differing motions of the articulators to reflect the difference that he hears. At all stages in language learning understanding precedes production. Furthermore articulation is not essential to the acquisition of language. Lenneberg (1964) presents the case of a boy who was unable to produce any speech at all, although his hearing was normal, yet at 8 years he showed considerable understanding of what was said to him, to the extent of executing commands, distinguishing colours and numbers (p. 124 - 5). This is not to deny any importance to articulatory mediation in reinforcing sound discrimination; rather to place it in relation to other factors such as organization on higher linguistic levels. Understanding of speech-sounds is possible without articulatory ability, but articulatory ability is not possible without understanding.

2.5 Sex Differences

Studies of the first years of life such as those by Irwin (1957, p. 417), Morley (1957, p. 48) are agreed that the onset of speech and the first stages of language are unaffected by differences between the sexes. A superiority of girls begins to appear at the end of the second year, and is in evidence throughout childhood in various aspects of language. McCarthy (1954) summarizes a number of studies all of which show a slight superiority of girls over boys in differing evaluations of linguistic skill (p. 579 - 581).

In articulation, Wellman et al. (1931, p. 78) and Williams et al. (1937, p. 76) report that girls score better than boys on the number of speech-sounds correctly produced at most ages. Templin (1957) agrees with Poole (1934) that between $2\frac{1}{2}$ and $5\frac{1}{2}$ years boys and girls develop articulatory ability at equal speed, but then girls improve faster than boys, and at $6\frac{1}{2}$ have reached a stage which boys do not attain until $7\frac{1}{2}$ (p. 34). Girls as a group also excel in precision of articulation or 'intelligibility'. McCarthy (1954, p. 537) and Morley (1957, p. 48) both report differences between the sexes at all ages up to 8 years in intelligibility, and Morley notes that boys make up the majority of groups of stammerers and speech-defectives of different kinds (p. 49). Accuracy in speech-production is matched in accuracy of speech-sound discrimination in Templin's (1957) test, the results of which show girls consistently ahead of boys by roughly a year's score (p. 72). Many of Templin's findings, however, suggested that differences between the sexes are not so great as was previously supposed: though girls scored consistently higher on all her tests, these scores were seldom significantly higher than boys (p. 145). Other findings have been made confirming this suggestion. Ervin-Tripp (1966) mentions a study by Anastasi and de Jesus (1953) of Puerto Rican children in New York, which found no real difference between boys' and girls' performance (p. 90). Cf. also the results of the test of speech-sound discrimination in Chapter VI (2.2). It is possible that the differences between the sexes so far noticed

are due to social differences, resulting from differing adult expectations from boys and girls. On the other hand, if there are innate differences between the sexes, these may be qualitative rather than quantitative, resulting from personality differences. Girls, for example, show greater tendency to conformity than boys in social behaviour (Campbell 1964, pp 297, 311). The desire to conform with the society around the speaker may produce a sharpened sensitivity to the language of that society. A more sensitive discrimination of speech-sounds leads to a more accurate reproduction of heard speech. Penfield and Roberts (1959) report Ilg's distinction of two types of child personality - the 'imitative' and the 'creative':

"Children in the first group learn more rapidly and accurately with less baby-talk and jargon. Girls are more likely to be placed in this group of accurate learners than boys. The creative learner is more apt to elaborate pronunciations of his own." (p. 243)

Templin also reports that at the older ages girls tend to excel in the articulation of sounds, while boys excel in word knowledge (p. 147).

2.6 Position in Family

At one time it was thought that a child with older brothers or sisters had an advantage over the singleton with regard to language learning. Stern (1924) held that older brothers and sisters were better tutors than adults because they were nearer in age and thus in likeness. Imitation was made easier for the young child

because "imitation grows in intensity in proportion with the likeness of the copy to the copier"(p. 157). Irwin (1957) reported, however, that sibling influence had no effect on the sounds produced in the first two years of life, contrary to what he might have expected to find (p. 418). Morley (1957) found no difference in the age of onset of speech for only children and those with older siblings (p. 50). After the stage of sentence-forming a difference begins to emerge between the performance of these two groups of children, and it is almost invariably in favour of the only children or of the first-born, in contradiction to early beliefs. Again, McCarthy (1954) provides material from several studies to show that children with the greatest amount of contact with adults, such as first-born children enjoy, reflect in their language the benefits of broader experience and greater practice opportunities that such contact affords (p. 584-6). At the other extreme are children who are cut off from adult language and stimulation as a result of having spent their early life in an institution. Lewis (1963) considers in detail the detrimental effects of institutionalized life on language development (pp. 113-4, 159 - 162). Morley (1957) notes a deficiency of cases of defective articulation and of stammering among first-born children, and also a suggestive correlation between the number of older siblings a child has and the age at which intelligible speech is developed (p. 50-2). She finds also that twins have more defects of articulation in the early stages than other children, but that these defects do not persist among twins any more than among other groups after

the age of 6½ (p. 377-8). The language development of twins, triplets and other multiple-birth groups tends to suffer in the early stages, in that their peculiar situation may deprive them of adult language stimulation, and also possibly in that a very close emotional attachment with their twin or twins reduces the drive to develop communication with older speakers. As Luria and Yudovich (1959) show, this hindrance to language development results directly in intellectual backwardness. Quite often an autonomous language or idiolect is created by the twins, and persists for some time until, either naturally or with external encouragement, each twin starts to attempt more complex forms of communication with his environment. Other studies described by McCarthy (1954 p. 590-1) show that early forms of language retardation are more severe with triplets (Howard, 1946) and even more pronounced with quintuplets (Blatz et al. 1937).

2. 7 Social Differences

The effect of the socio-economic status of a child's parents, like that of its sex or position in the family, does not become apparent until the end of the child's second year. Morley (1957) observes that parental status does not affect the first emergence of language or the age at which sentences of two or three words start to be formed (p. 52-3). She finds a correlation between low family status and the severer defects of articulation, but argues that this may be rather a case of persistence of defects than of

greater incidence of defects (p. 53). Irwin (1957) also notices the effect of parental occupation becoming apparent after 1½ to 2 years (p. 418). Poole (1934) and Templin (1957) both found an increase in correct articulation more rapid among upper than lower socio-economic groups (Templin, p.37). Smith (1926), in a study of children's vocabulary, found that when children of the same age and mental ability were paired according to social status the higher social class showed a higher average of words known, though the numbers used were too few to allow of any definite conclusion (p. 62-3). Descoedres (1930) noted the superiority of children from 'milieux aises' over those from 'milieux populaires' in the results of almost every one of her language tests (pp 46, 96, 112, 135). The explanation for this difference must lie partly in the quality of language heard by the child from his parents. Bernstein (1963) has expounded the differences between working-class 'public' or 'restricted code' language and middle-class 'formal' or 'elaborated code' language. This distinction is discussed more fully in 6.2 below. Suffice it to say here that in terms of the flexibility of language and of the quality of experience that he derives from the language heard, the middle-class child, all else being equal, has an advantage over the working-class that becomes more pronounced as the demands of education place ever greater premium on the power to grasp relationships and on abstract thought. These are abilities directly dependent on language maturity and on linguistic organization, as Luria and Yudovich have shown (1959). The superiority of middle-class children may also be due to the

greater involvement of the middle-class parent in the child's language development. McNeill (1966) noticed from Brown's records that some academic parents expended the incomplete or reduced sentences of their children much more frequently than did the parents of more proletarian background: the children of the latter parents showed a strikingly slower rate of development in the learning of syntax (p. 75-6).

Other social variables were studied by Morley (1957), who could not, however, find any correlation of retarded speech with Parental crime, unemployment, maternal incapacity, neglect or nursery attendance (p. 54). Irwin (1957) found no differences in speech-sound development corresponding to racial differences (p. 416).

3. Outline of Linguistic Development

3.1 Importance of Earliest Stages

Though the subject of this thesis is the development of phonology in children of school age, the youngest of whom are over 3 years old, yet it will prove worthwhile to outline the major features of language development in the first three years as well as beyond. Such an outline will, it is hoped, provide explanations for many of the characteristics of 3 and 4 year olds' speech, and furnish a basis from which to undertake a description of the child's further development. The significance of the first years of life to an individual's language development cannot be over-emphasized. Even at birth, although we cannot start to use the word "speech", the

baby's utterances give abundant acoustic evidence that he possesses the noise-making mechanisms that are later to form the physiological basis of speech, and very soon after birth he becomes aware of the power of vocalization to elicit responses from other humans. The primary characteristics of language then are present in the baby's behaviour from almost the very beginning. More significantly from the point of view of this study, it is perhaps only by an investigation of research into the early years of speech that we can identify the processes that operate in language learning, such as the differentiation of mass units, the growth of structure in all aspects of language, which begin early, and have not perhaps been completed by the age of the youngest speakers in this study. It is necessary to look backwards to see the origins of the phonological system of Nursery children, whose speech does in fact show many traces of earlier phonological states. In the same way it will be seen that to understand the beginnings of phonetic development, that take place at about 12 months, it is necessary to look back to the babbling stage, and to understand babbling it is necessary to look back to the 'cooing' stage. Though we may talk of a child's reaching specific stages of achievement it must also be remembered that progress in the child's language is neither regular nor characterized by clear-cut definition of each stage. The babbling stage does not stop as soon as the stage of first words begins, nor indeed are the first words clearly distinguished at all times in his usage from babble; both types of utterance may be found in vocal play. All these so-called 'stages'

are artificial divisions of observed phenomena, as all classification must be, except that language development lends itself to discrete classification rather less well than other aspects of behaviour such as walking or running. Some of the stages described in the following section may be missed (or unobserved) in some children. Successive stages may occur practically simultaneously for one child, but separated by months for another. All of which makes it the more important that language development should be seen as the evolving of patterns and processes over a period, rather than as a succession of inter-dependent but separable stages.

With this qualification borne in mind, it is proposed to present an outline of linguistic development, not limited to phonological aspects, but presenting the main linguistic milestones from birth to 10 or 11 years, where these are relevant to our study. This outline will provide a framework in which details of phonological development may be more easily discussed in section 4.

3.2 The First Year

1 Neonate

It is a common observation that the baby's first action after birth is to give vent to a cry. This first utterance has no linguistic or even affective connotation. Its function is purely biological - to clear the breathing tract of amniotic fluid and to initiate the action of the lungs. However, the appearance of this cry is evidence that all the vocal apparatus is present and

functioning at birth. As Lewis (1936) declares, it is possible to discern the rudiments of speech in the earliest sounds a child utters (p. 2). Grégoire (1937) observes that the neonate has reached a considerable state of maturity in both vocal and auditory terms, and suggests that the foetal period of gestation should be taken into account in any full study of speech (p. 22). Fry (1964, p.78) and Crystal (1969, p. 43) and Lewis (1936, p. 21) make the point that the undifferentiated cry of birth soon becomes differentiated by affect. The infant now cries when hungry or in a state of discomfort. In a state of well-being he is at first silent, perhaps smiling, and later starts to vocalize, or 'coo'. Bergendal and Talo (1969), in a summary of Van Riper's (1963) account of speech development, view the vocalizations of the first eight weeks as purely reflex and not to be considered as speech in the sense of controlled activity. Grégoire (1937) makes an analogy between these vocal movements and reflex movements of the limbs and facial muscles, movements which do not yet express, but 'betray' diverse sensations of satisfaction and discomfort (p. 23)

11 Controlled Sounds

After the first two or three months vocal activity becomes more conscious and controlled. The child may utter undifferentiated sounds in response to adult speech (Lewis 1936, p. 71; Fry 1964, p.77) and to non-speech sounds such as a dog's barking or the whistle of

a train (Grégoire 1937, p. 46). At first it is most likely that the child is not responding specifically to the sound but to the total situation - in the case of response to adult speech, the presence of a friendly adult is probably as important as the sound of a voice. Bergendal and Talo (1969) do well to make the point that babbling, which begins now, is vocal play. Many early child linguists such as Lewis, Stern, made the mistake of reading equal degrees of expressiveness into infants' crying and into the contrasted vocalization that accompanies their states of well-being. On this basis they constructed a theory that sounds are innately expressive or linked to affective states. Thus the sounds of crying are regarded as expressive of discomfort - Stern (1924) speaks of the "quite elementary note of aversion [a]" (p. 146) - while the sounds that occur in cooing and later babbling are similarly expressive of pleasure - cf. "the caressing note of [i]" (p. 146). Though Lewis does stress the play aspect of babbling he follows Stern along these lines. As the child's babbling is characterized by an increasingly large repertoire of sounds, such theories have the difficulty of explaining how nearly every imaginable sound is at some time linked with a pleasure context (Lewis 1936, p. 60-9). The fact is that in these early months crying is very much a means of expression, and is actively used to elicit responses from the environment, for the satisfaction of hunger or the alleviation of discomfort. Cooing, and later babble, is not directed at the satisfaction of any need, and is a very different form of expression. Language does not develop from crying,

whose limited phonetic resources remain very much the same, and are non-phonemic, though perhaps not non-linguistic. It develops only from babbling, from vocal activity free of the pressing demands of hunger and discomfort. It is through his babbling activities that the child learns to control speech

iii Babbling

During his babbling phase the range of sounds that the child produces increases enormously (see 4.1). The child is learning to differentiate speech from the total situation, and to associate it with generally pleasurable sensations. This reinforces his own vocal activity. Fry (1964) sees this period as important in the establishment of the auditory feed-back loop, whereby the child associates specific articulations with specific acoustic impressions (p. 78). Once this is established he has a basis for making unconscious comparisons between his own speech and the speech that he hears from others. The child also begins to show evidence of absorbing influences from his linguistic environment. His vocalizations become more like the adult pattern, taking on a syllabic form CV or VC, the syllables strung together in polysyllabic sequences. Though not phonemic segments, the sounds are more easily identifiable to the adult ear than his earlier vocalizations. (1943, p 104)
They could be classified with Pike_A as 'real segments'. Adults may pick out some of these syllables and decide that something like [ta] is a real word, and will then encourage the child to use it again in a given situation. This is one of the paths by which

first words are arrived at. The child may also show the influence of adults in his intonation patterns (see 1.21 above). When discrimination of adult speech is at a certain level the child may give evidence of understanding speech before he actually attempts to use words meaningfully. Stern (1924) speaks of the 'trained tricks' that a child may learn to perform in response to specific verbal requests, such as pointing to objects when asked, or clapping hands when playing 'pat-a-cake' (p. 142). Grégoire (1937) believed that his sons could understand expressions before they 'dared risk using them' (p. 270). These signs are normally observable in the second six months of life, at the end of which first words are beginning to appear.

iv Readiness to Communicate

Before the stage of first words is reached there is an interesting development in children's behaviour which can be described as the stage of readiness to communicate. Grégoire (1937) noted that his son Charles at the age of 7 months showed signs of a strong desire to communicate something to his father:

"Par moments, Charles fait de grands efforts comme pour exprimer quelque chose: sa bouche se contorsionne; son corps se remue; des inspirations profondes et de fortes expirations, sans production de phonèmes se succèdent et se répètent. On dirait un orateur, mimant sans parole l'idée ou l'émotion qui l'excite. On surprend dans cette agitation l'éveil normal d'une conscience jusqu'à présent non dégoûdée. Il s'agira, non pas seulement de crier, ou de pleurer, mais aussi de parler, ce mot étant employé avec la restriction qui s'impose."

(p. 54)

This is followed or may be contemporaneous with another condition, that of readiness to imitate. Lewis (1936) describes his child subject 'K.' ceasing to respond to adult speech with speech or vocalization of his own; instead he shows signs of listening carefully and attempting perhaps to comprehend (pp 71, 82-7). This stage is also before the appearance of first words. Ervin (1966) also notices that words and phrases may be uttered for the first time long after they are first heard by the child (p. 187-8). This suggests a period of mental gestation between recognition and use of a new linguistic feature. Grégoire provides an illustration of the phenomenon. At the end of his seventh month his son Charles seemed to listen very carefully as his father said "Papa", but did not imitate it immediately. The word was first recorded a few days after, when he pronounced it clearly (1937, p. 55).

v First Words

Grégoire does not, however^e, claim that "papa" was his son's first word. The first utterance that he recorded worthy of this description was in fact [tɛ] = "train". For a long time [papa] was little more than a specific phonetic response to the pleasurable sensation of seeing either of his parents; as such it was interchangeable with [mama]. It was a long time before there began to appear any difference in usage between these two forms, and after that a further period before either form was used in anything like the adult way (p. 68 foll.). [tɛ], on the other hand, was used regularly and consistently when a train was seen and heard

passing the house, and was usually accompanied by the action of pointing (p. 78). Much has been written concerning how and why the child's first words come into being (cf. Lewis 1936, Grégoire 1937, McCarthy 1954 p. 523-6) but this is not the place to go into a detailed investigation of findings and opinions. It is sufficient to report that in general the child's first words appear between the ninth and twelfth months. Morley (1957) finds that 66% of children in her survey first used words with meaning during this period (p. 20). Bergendal and Talo set more liberal limits on this stage - between 10 and 18 months (p. 22).

Some utterances can now be assigned semantic interpretations, and have a relatively stable form, yet the child's language is still far from what is understood by the term in connection with adult communication. There can be no parts of speech, since all utterances are one-word or holophrastic in form. Most utterances are closely linked to the immediate situation and rely heavily on gesture, context and possibly intonation to give them 'meaning'. It is generally recognized, for instance, that "mama" is at first more an expression of some need, or a demand for attention and comfort, than a referential form (e.g. Lewis 1936, p. 126-9; Jakobson 1960). If a child develops an effective gesture it may obviate the need for him to develop language at all during this period (Stern 1924, p.145; McCarthy 1954, p. 597). This can be said to be the period of totally synpraxic speech. It lasts from between 9 and 12 months to between

18 and 24 months, from the appearance of first words to the beginning of sentence-forming. The various functions of language are not differentiated at this stage - Bühler's 'Expressive, Evocative and Referential' for example (Lewis 1936, p. 10 - 17); Gregoire (1937) comments that when his son Edmond first pointed to an object and called [ta] (= "ça") he was not only making Referential use of the word, but also expressing interest in the object, perhaps also a desire to hold it - Affective function - and further drawing the attention of his parents to the object in question - Social function (p. 93).

vi Characteristics of Early Vocabulary

The peculiar features of children's vocabulary during this period have also been widely discussed (Stern 1924, p. 145 foll.; Lewis 1936, p. 172 - 185; Ervin-Tripp 1966, p. 60-4). Many of the child's words are idiosyncratic forms, not imitated from adults, and with their own distinctive meaning. Stern's son, for instance, used the sound 'ffff' for the sound of blowing out a lamp, and later came to refer to all lights as 'ffff' (p. 147). There is the generalized use of one word where we would use several differing items - such as the form [ti:] for all animals (Lewis 1936, p. 215-6). There is transference of meaning based on qualities of thing and experiences that we would regard as non-essential: Stern's daughter called the toes of boots 'noses'. Stern explains, "She was at this time fond of pulling our noses and discovered the same possibility of pulling in the boot-toes too." (p. 151). These are of course fruitful sources of change in adult language, but used by the child in an

idiosyncratic way. In the child's speech babble-forms are gradually replaced by words from adult language. When first words appear there is no sudden and dramatic change in the child's vocal behaviour, but gradual changes take place in the proportion of vocal play to speech addressed to adults. Vocal play is still an important part of the child's speech, though it becomes less and less predominant in the ensuing months. Eventually it is confined to the child's solitary play and occasions such as just after waking and just before going to sleep (Weir 1962, 1966). Bergendal and Talo (1969) see the child's speech at 18 months as consisting of some meaningful words, some echolalia and some vocal play. The number of words used by the child increases slowly over this half-year or 9 months ^(9-18 months of age) until, when sentence-forming begins, the total vocabulary is between 100 and 200 words (Smith 1926, p.8). During this period also the child's phonological system is being constructed. The major consonantal oppositions are mastered, and most of the vowels have been acquired by the end of the period.

3.3 The Emergence of Language as an Independent System

At a certain point, usually towards the end of the second year, there is a change in the function of speech, in its relative importance among other forms of behaviour. Whereas in the previous syntactic stages meaning was heavily dependent on the situation in which a word was uttered, the child now acquires the power to refer to things and experiences not actually present. Stern (1924) refers to

this development as 'The Awakening of a Faint Consciousness of the Meaning of Speech'(p. 162), explaining this awakening as the growth of an awareness in the child that everything has a name - the child's first original thought. To this Vigotsky (1962) objected that what takes place at this period is not a philosophical awareness, but a behavioural change: language is now emerging from other forms of behaviour as an independent system, no longer dependent on physical context for meaning (p. 28). It becomes a conventional substitute for behaviour, but also, and more important from the point of view of behaviourists such as Vigotsky, Luria and Yudovich (1959), it is the means whereby the child can form categories and relationships for the first time. Structuring in both thought and behaviour dates from this age. The immediate effect of the emergence of an independent language system is that the child is now able to use speech more effectively to define his wishes and requests. Language is now, in the words of Bergendal and Talo (1969) a 'tool instrument' (p. 22). The onset of this stage is marked in the child's behaviour by an insistent demand to know the names of things, which is followed by a rapid increase in vocabulary, first of nouns, then of verbs and later adjectives and grammatical items (Grégoire 1947, p 435-9). In neurological development this stage is characterized by the emergence of one hemisphere of the brain, usually the left, as dominant in speech functions (Penfield and Roberts 1959, p.240; Lenneberg 1967, p.151). We may say that the critical period of language learning has now begun.

11 Sentence-forming

It is not clear whether the commencement of sentences of more than one word is associated with the change in the organization of the brain, or whether an increase in utterance-length may precede the emergence of the independent language system. The twins studied by Luria and Yudovich (1959) were producing two and three word utterances, even though their language had not emerged from the synpraxic stage. These twins were, however, a good deal older than the age at which sentence-forming usually begins; it was the twin situation which was retarding them rather than any delay in brain maturity. Morley (1957) puts the stage of two and three word sentences at 18 months for 40% of children and at 24 months for 80%(p. 21). Miller and Ervin (1964) likewise see sentence-forming beginning before the second birthday for most of the children in their study (p. 13-4). If utterances of more than one word do occur before sentence-forming properly so-called begins it may be that they are cases of phrases learnt 'in toto', with little awareness on the part of the child of the nature of the constituents. Miller and Ervin note some examples of this kind of learning (p. 30) at the same time as true sentence-forming; Gregoire records some instances in his sons before they start to form sentences out of their own resources (p. 183-4). The characteristics of these early sentences have been discussed by Brown and Fraser (1964), Brown and Bellugi (1966), Miller and Ervin (1964), Ervin (1966), McNeill (1966). Sentence-length increases as the constraints on memory-span and the number of morphemes that can be handled in a sentence are lifted. Smith (1926) found that

both vocabulary and sentence-length increase over the next few years, and that the most significant increases are in sentence-length and frequency of complete sentences, up to the age of 4½ (p. 67). It may be that elementary forms of phrase-relationship begin to appear. When they do, the grammatical relationship is at first paratactic. Hypotactic constructions and genuine subordination of clauses appear after the age of approximately 2½ (Stern 1924, p.168).

iii Understanding Precedes Production

Understanding still precedes production, as at all stages of development. Distinctions may be made in the child's perception that are not in fact reflected in speech. Grégoire (1947) quotes an instance where his son could hear the difference between "caché" and "cassé" but could not realize the difference in his articulation. Thus, at 3½ years he said what sounded like "cassé", but was obviously intending "caché": when what he had just said was repeated to him he insisted on the difference of the forms: "Non, pas cassé, cassé." (p. 283). Stern (1924) mentions the case of Stumpf's son who, until the age of 3½, used the very early forms of vocabulary and syntax which he had learnt in his second year. Then he suddenly began to use forms proper to his age, fluently and largely correctly (p. 154), indicating that his understanding of language was steadily and progressively expanding throughout this period, even though his output did not reflect the fact. Bergendal and Talo (1969) also describe cases of 'idiopathic delay' in language, when children may not start to speak until the age of 5, 6 or 7 years, even though their understanding of speech appears to be basically intact (p. 23).

iv Acquisition of Syntax

The course of the third and fourth years sees a rapid expansion of syntactic organization. McNeill (1966) sees the learning of syntax as covering no more than two years:

"Grammatical speech does not begin before one-and-one-half years of age; yet, as far as we can tell, the basic process is complete by three-and-one-half years. Thus a basis for the rich and intricate competence of adult grammar must emerge in the short span of twenty-four months "(p. 15).

The basic learning concerns the underlying sentence-generating rules and grammatical categories. Elaboration of these bases in the way of syntactic, morphophonemic and phonological transformations begins within this period and continues over the next years, at differing speeds for different children and, possibly, for different languages. Slobin (1966a) considers that Russian children do not master their relatively elaborate morphological system until the age of 7 or 8 years, some time later than English-speaking children are generally presumed to have mastered theirs (p. 136).

v The Analytical Approach to Language

After the age of about $3\frac{1}{2}$ years, when the grammatical base of further language is secured, an interesting phenomenon occurs in children's linguistic behaviour, which may have an important bearing on both language-development and mental development. This is the growth of a 'theoretical' or analytical attitude to language. Luria and Yudovich (1959) observe the emergence of this phenomenon in some tests on their two twins, one of whom has had

special language training. The twins were presented with a number of sentences such as "In the room are five chairs" (which in the Russian would consist of three words - "In-the-room; (are) five; chairs"), and were asked to say how many words were in the sentence. The twin, Yura, who had received language training could identify the number of words correctly, but the other twin, Liosha, persisted in counting up the number of objects mentioned. In the sentence "In-the-room; one; chair" he said there were two "words", one being "room" and the other "chair". "In-the-dining-room; five; girls" had, he said, six words (p. 116-7). Here Yura had developed an analytical attitude as a result of his greater skill in language. This attitude may also be found in a child's awareness of phonological features of language. Gregoire records an instance in the history of his son Charles, who at the age of $3\frac{1}{2}$ became conscious of the difference between his father's pronunciation and that of his Walloon contemporaries, and attempted to correct his father's pronunciation:

"On ne dit pas méchant ([e]); il faut dire méchant ([ɛ]); c'est drole, ça, méchant." (p. 270).

Charles also began at this age to correct his own grammatical mistakes, either spontaneously or when an error was pointed out to him by adults (p. 272). Weir (1966) observes her eldest son, Anthony, aged $5\frac{1}{2}$, criticizing the pronunciation of his $2\frac{1}{2}$ -year old brother (p. 164; the incident is quoted below in 3.3 vi). This sensitivity to variations in the speech of others is noticeable

i t ch

in the children of the Nursery group in the present study as well as older children. It is more noticeable in the younger group because there is more opportunity for them to hear errors of speech from the children around them, both grammatical and phonological. Steven (4,9) corrects another boy's sentence "What is there else?" with "What else, you mean". David (4,6) and Andrew (4,0) laugh at and comment on an unusual pronunciation by Peter (3,6) of "toys" - [⁵tɔɪz]. Miller and Ervin (1964) suggest that a child cannot be said to have acquired a sense of grammaticality until he begins to correct his own mistakes (p. 28), and it will obviously not be possible to obtain from children judgements of what they consider correct or incorrect until they reach this stage. It seems likely too that a child will not have a sense of grammaticality until his own basic learning of syntax is fairly well complete.

It would be tempting to try and relate this development in language to a more general development in children's thought to establish whether the analytical approach to language is only a reflection of a more analytical attitude in other aspects of thought. A great number of questions of causality - "why?" and "what for?" are recorded in the fourth year of life (Stern 1924, p. 140; Métraux 1950, p. 50). This is, however, outside the scope of this work.

vi Articulation and Phonemicization

As the child progresses towards a mature speech two separate though related processes must be distinguished. On the one hand there is

articulation, the mastery of movement and co-ordination of the vocal organs. On the other hand there is the classificatory process that is involved in grouping a mass of auditory impressions into the psychological units of phonemes and reflecting this classification in speech production. This is a distinction that many articulation tests fail to make, as Lewis (1963, p. 107) pointed out. The latter process is the more essential for understanding and speaking, and seems to take place over a much shorter period. Articulation may never be perfected in certain types of speech-defectives, yet they may have a complete set of phonemic oppositions, imperfectly realized. A child too may be able to distinguish between the word-pairs "pin"- "spin" or "train"- "chain" quite early on in perception, and in speech as ['pʰɪn] - ['pɪn] , ['tʁɛɪn] - ['tsɛɪn] , though mastery of the segments [sp] and [tʃ] may not be achieved until some time later. There is some disagreement as to when the child's phonemic system is complete. Ingram (1968a) believes that the child has acquired "almost the complete sound-system of English" as early as 2½ years (p. 5). Descosudres (1930) states rather vaguely that the children in her survey could pronounce all the sounds of French at the age of 3 years "s'ils s'en donnent la peine" (p. 47). Albert Jones (1967) finds that the phonological system of his 4-year old and most of his 3-year old subjects is "functionally complete" with the exception of a lack of regular distinction between /r/ and /w/ (p. 113). Menyuk (1967) notes that by the age of 4 years most children are using all the basic syntactic structures and presumes that the basic phonological

structure is also present by this age (p. 102). Bergendal and Talo (1969) put the age of completion of the phonemic system at 5 years at the latest (p. 22) while Fry (1964) sees the completion of the "set of phonemic oppositions" as occurring between 5 and 7 years (p. 85). Most of these differences can probably be attributed to the variety of terms used in the studies and to failures to distinguish competence and performance. A short piece of conversation from Weir's (1966) records, between herself and her two sons, is very instructive in this connection:

Michael (2½) : How bout a coom?
 Weir : You have a spoon.
 Anthony (5½) : Why does he say coom?
 Weir : I don't know.
 Anthony : Mikey, can you say spoon?
 Michael : Spoon (p. 164)

Here we may see that although the 2½-year old has certain forms that he uses ordinarily in speech and vocal play, yet his basic competence is more advanced than his performance indicates. This extract shows also the difficulty of arriving at an assessment of a child's competence through a study of his performance. It does appear that phonological competence is acquired surprisingly early, probably as early as 2½ years, but that this competence is not completely reflected in performance until a considerably later age, and in some respects such as the /r/-/w/ opposition as late as 7 years. As regards control of articulation Templin (1957) reports that by 8 years children's articulation is essentially mature. Features of childish articulation may of course persist in some

speakers, and there are those who never achieve standard articulation of some sounds, particularly /s/ and /r/.

3.4 Later Childhood

- i Although the phonological structure and the syntax of language is acquired relatively early in life the child still has a great deal to learn over subsequent periods in linguistic usages. Lenneberg (1967) sees development in the later stages of childhood in terms of control of superficial details and stylistic niceties that are strictly speaking irrelevant to phonological structure (p. 280). As the child's environment and the range of his experience expand, language becomes a more flexible means of expression. At least three different situations call forth different styles or modes of language - the home, the school and the peer-group. Lewis (1963) stresses the part that language plays in the child's progress through school, and the differentiation that takes place in the functions of language (p. 170-1). McCarthy (1954) reports Hahn's ^{finding} (1948) that children in the first grade at school used more complex, elaborate sentences when talking to each other in a formal classroom situation than when talking to adults outside school (p. 552). Within the peer-group sex-groupings may also be formed (Campbell 1966, p. 299) and sex-differences may be noted in speech, most obviously in vocabulary (Lewis 1963, p. 210-2). It seems likely that peer-group and sex-group language does not involve the learning of many new linguistic features, except in the case of the child whose parents' language is different from that of his peers. More probably,

part of the linguistic resources already acquired becomes associated with the peer-group or sex-group situation, while other parts come to be reserved for formal or academic situations, and for the home situation. Some of the characteristics of group-language are discussed in section 6 below.

ii Internalization of Thought

After the age of 7 years the child's language becomes a more specifically social instrument. It is more frequently addressed to some specific audience, rather than taking the form of monologue or collective^{monologue} - Piaget's (1926) two forms of 'egocentric' speech (p. 13-9). After 7 years or so, Piaget maintains, egocentric speech disappears from the child's linguistic activity, as his thought develops from autistic to logical. In this progression egocentric speech and egocentric modes of thought are regarded as transitional stages (p. 45). Vigotsky (1962) sees egocentric thought as not disappearing around this time, but as being internalized, to become conscious or sub-conscious thought (p. 17). He stresses the role of egocentric speech in planning and problem-solving. The internalization of this type of thought - so that the child for the first time thinks consciously to himself instead of thinking aloud - has no effect on the structure of language. It does, however, mark the beginning of a period when, as Piaget puts it:

"The higher stages of conversation properly so-called.... take place between children. It is also at this age that children begin to understand each other in spoken explanations, as opposed to explanations in which gestures play a important part as word ." (p. 41-2)

iii The End of the Critical Period for Language Learning

As the child approaches the early teens, the critical period for language learning is coming to an end. The forms of language that the child is using at 10 or 11 years will probably remain with him essentially unchanged for the rest of his life. Lenneberg (1967, pp. 143 - 150, 158, 179) and Penfield and Roberts (p. 235-6) stress the importance of the first ten years of life in the formation of language patterns, and agree that after this period the brain's capacity to relearn speech, as in aphasia, becomes severely limited. The flexibility or plasticity of the young brain quickly declines after puberty, and "the brain behaves as if it had become set in its ways" (Lenneberg, p. 158). Penfield and Roberts set the age of neural consolidation somewhat lower than Lenneberg:

"At eight the child begins to hold on to patterns, and at nine, to fix these patterns" (p. 255)

though their conclusions are basically the same - a child's language learning is at an end, where his first language is concerned, by 10 or 11 years.

4. Phonological Development

4.1 Early Stages

i Neonate

The distinctive character of neonate vocalization has been emphasized by recent writers. McCarthy (1954) agrees with Lynip (1951)

in stressing that these vocalizations should not be described in terms of adult sounds (p. 516). The differences may have a physiological basis. Jespersen (1922) measured the length of a new-born baby's jaw and found it to be 45 mm., increasing to 60 mm. at 3 months, and to 75 mm. at 11 months. By 5 years the jaw had attained virtually its maximum length - 99 mm. on average for males and 93 mm. for females (p. 104). Changes in vocal form during the first year may be partly attributable to changes in the peripheral organs (Ervin-Tripp 1966, p. 58) - the neonate has a flatter palate and larger tongue in relation to the size of oral cavity than the older child. Acoustic properties of neonate utterances can also be ascribed to a lack of muscular control in vocal production. Lenneberg (1964) found that spectrograms of 2 to 4 month old children's vocalizations showed marked divergence from the patterns associated with adult vowels. The formant structure was ill-defined and only rarely identifiable as that of an English vowel; the 'accordion effect', caused by the bunching together, than separating, of the striations in the spectrograph, indicated a constantly changing frequency rate of vocal cord vibration, in contrast with the relatively steady rate found in spectrographs of adult vowels (p. 116-7). In these pre-babbling stages most vocalization is indeterminate and cannot be described in terms of vocoid and contoid. The vocal cords produce phonation, and if there do occur obstructions within the oral cavity, these are not strongly maintained. Such 'articulations'

as have been recorded are mainly caused by contact of the back of tongue with the velar or uvular areas of the mouth. Grégoire (1937) describes such sounds as variants of a 'phoneme' /r/ - the French uvular fricative (p. 30). Irwin (1957, p. 416) and Lewis (1936, p. 24) and indeed many other observers of child speech have recorded the fact that early non-crying sounds are back-orientated, though they over-emphasize the adult nature of the sounds with such transcriptions as [ɣ, x, h, ʔ, ʁ, ʁ̥] . Their predominance may be a result of the neonate's predominantly supine posture. The adoption of a sitting posture will affect the normal position of the soft palate^{and the tongue}, and it is this that probably accounts for a reduction in the number of back-produced sounds after the first 4 to 6 months (McCarthy 1954, p. 513). The growth of teeth also affects the types of sound produced (McCarthy, *ibid.*).

11 Babbling

The first sounds that are recorded in babbling proper have predominantly labial articulation. Lewis (1936, p. 34), Jespersen (1922, p. 105) have accounted for this by the fact that they are produced with the muscles used in sucking - in other words, they are initially sounds associated with the pleasurable activity of feeding. Others have tried to explain these sounds as the result of early imitation, resulting from visual observation of the mother's lips as she is talking. To this Grégoire (1937, p. 15) and Jespersen (1922, p. 105) reply that this is hardly likely since children, if they do look at the face of a speaking adult, look at the eyes

and hardly ever the mouth. Blind children too show the same early preference for labial articulations. Although there is a certain universality about the first sounds recorded in babbling, there is no fixed order in which sounds follow (Jakobson 1968, p. 28-9).

The opposition Vowel - Consonant seems to be operating early on, before the stage when the child starts to assimilate ^{adult} influences - since the babbling of deaf children is no different from that of normally hearing children in this respect in the first six months of life (Fry 1964, p. 78-9; Lenneberg 1967, p. 139). Reduplication of syllables of the pattern CV or VC is the commonest sequence in babbling (Ervin-Tripp 1966, p. 58) as in utterances such as 'tajtajtajtoto', 'avapamamam', 'tatata' (Grégoire 1937, pp. 95, 67), where sometimes the same syllable type is repeated, sometimes the vowel or consonant is varied. Jakobson (1968) notes the astonishing variety of sounds that a child's babbling may encompass (p. 21).

Quite commonly a child will produce a number of sounds that are not heard in the adult language around him, such as the ingressive vocoids and contoids, bilabial trills, labio-lingual [l] noted by Grégoire (1937, pp. 51, 62). Jespersen (1922) notices that sounds which give the child great difficulty later on are produced with ease in babbling. This represents the difference between doing a thing in play, without a plan, and doing the same thing with conscious intent - when a specific sound is to be produced at a specific point in a sequence, with one sound before and another

after (p. 106). When the child begins to use sounds intentionally and perhaps with meaning, the stock of sounds diminishes dramatically; there may even be a period of complete silence before the first phonemes (Jakobson 1968, p. 29). Ervin-Tripp (1966) comments on this division, both temporal and functional, between babble and the linguistic stage:

"The child's vocal output during this time (babbling) has no known formal relation to his later phonological and grammatical patterns, though the comprehension system lays the groundwork for these patterns. However, there appears to be no discontinuity in the functions of language, or in the social factors influencing fluency, which continue without a break from the pre-linguistic into the linguistic period." (p. 60).

4.2 First Phonemes

- i Any discussion of child phonology has to take into account Jakobson's (1949, 1968) theory of phonemic acquisition. Briefly, the theory states that the child's phonemic system is acquired neither randomly , nor ready-made from the adults around him. It develops systematically, by proceeding from the maximum possible phonemic distinction through smaller and smaller differentiations. Expressed in another way, it develops by bringing into the child's set of phonemic oppositions an increasing number of distinctive features. The first opposition is the maximal one of Vowel - Consonant. Though the child has been uttering syllables that apparently observe this opposition from the start of the babbling period, yet when he starts to try and control his utterance, the opposition takes the form of the two maximally contrastive

sounds. The first vowel of all is the most vowel-like or chromatic - an open //A//, while the first consonant of all is the most consonant-like - a labial stop, in articulatory terms the most extreme closure and the most perceptible absence of acoustic vowel resonance. If the consonant is also voiceless, this is yet another contrast with the full voicing of the vowel, though at this stage voiced and voiceless consonants are not contrastive. The consonant now subdivides; the first consonantal opposition is that of stop versus nasal. Closure of both oral and nasal cavities is contrasted with closure of the oral and resonance of the nasal cavity. //P//, a phoneme that may have many allophones, among them [p,b,t,d], is contrasted with //M//, which may have allophones [m,n]. Then the feature labial v. dental is introduced. Jakobson sees this split as the manifestation of a universal feature light v. dark. In acoustic terms the dental plosives are the extreme 'light' consonants - more so than the alveolars, which is why dental articulations are encountered so often in children's speech - while the labials are 'dark' in comparison. This basic consonantal^{system} is present in all the languages of the world. Once it has been established the vowel system develops further. To the maximally chromatic //A// is added a narrow vowel //I//, the maximally achromatic vowel. In the vowel system chromatism is the primary feature, as the light-dark opposition is primary among the consonants. Once this first vowel division has been made along the polarity of chromaticity the feature light-dark is introduced into the vowels as a second feature, and the narrow vowel is split

into a palatal or light vowel and a velar or dark vowel, the opposition being further strengthened by the rounding of the velar vowel. Either this split into //I// - //U// takes place, or a third vowel appears between //A// and //I// that is non-open and non-close. Every language of the world, it is claimed, has a vowel system of at least three vowel items, arranged in one or other of these ways. After the establishment of these vocalic and consonantal bases, further development proceeds through the introduction of new features into the phonetic system. The feature of chromaticism, for example, is introduced among the consonants when velar consonantsⁿ are acquired. At all points, however, phonological development is subject to 'irreversible solidarities' - sequential relationships governing the order of appearance of phonemes. Thus, a fricative at a certain point of articulation can only appear after the stop associated with the same point : a back-front contrast between two open vowels can only occur if there is a similar contrast between two closer vowels : back consonants, such as /k/, /g/, /ŋ/, /ʒ/, can only be acquired after front consonants with the same manner of articulation : 'secondary' rounded front and unrounded back vowels can only appear after the 'primary' vowels at the same degree of aperture : a second liquid such as /r/ or /l/ is among the last contrasts to appear. The late appearance of sounds in a language is related by Jakobson to the rarity of a particular sound among the languages of the world, though there may be other factors at work among these late arrivals in the phonemic system. Fry (1964) has argued that the frequency or infrequency with which a sound

occurs in a given language, and its functional load - rather than its total frequency in the languages of the world - will determine the rate at which it appears in children's speech. So /ʒ/ as in English "measure" and French "jeune", will appear later in English, where it is comparatively infrequently used, than in French, where it is more common (p. 85). The most important factor determining the speed and ease of acquisition of a particular sound, as Jakobson's approach emphasizes, is the acoustic distinctiveness of ^{the} a sound. Miller and Nicely (1955) found that in general sounds that differ in place of articulation are harder to distinguish than sounds differing in manner of articulation (p. 349). Thus the difference between /f/ and /p/ is more easily perceived than that between /f/ and /θ/. The latter distinction is in fact one of the hardest oppositions for English speakers to perceive, and it is also one of the last fricative contrasts that English children master (Ingram 1968a, p.5). Initial ~~consonants~~ in a word are more easily perceived than those in final positions (Pronovost and Dumbleton, 1953, p. 262) and phonemic oppositions are realized in word-initial position earlier than in ~~final~~ position (cf. the findings of Templin 1957, Wellman et al. 1931 in 5.2 below).

11 The Relation of Babbling and Language

Ervin-Tripp (1966) in the quotation above sees no formal relation between babbling and the linguistic period proper. Jakobson (1968) also insists on making a clear distinction between the sounds of babbling and the first sounds that are used with distinctive

'meaning' (p. 29). Lenneberg (1964) even proposes that babbling is not essential to language, or at least to the understanding of language. He describes the case of a boy who could not utter speech, yet showed a measure of understanding at the age of 8 years (p 124-5). This attempt to divorce babbling and language proper may represent an over-reaction to the approach to infant language exemplified by Irwin (1957), who made no distinction at all between the two forms of utterance. He stated that at the age of 2 months the child had on average "seven and a half phonemes", and that this number increased to twenty seven at 2 years of age (p. 412). While this approach is far too over-simplified in the light of Jakobson's work and subsequent findings, yet it would be wise not to underestimate the part played by babbling in early language. The child's first words, for example, have a structural form which owes much to babbling forms. Lewis (1936) finds that 46% of his subject K.'s first words were of the reduplicated form CVCV (p. 169). Ervin-Tripp (1966) also notes the early predominance of this pattern in children's words, becoming less common after 2 years of age (p. 69). Jakobson (1968) states that with the arrival of the first phonemes there is a drastic reduction in the number of sounds produced by the child, but does not make it clear whether this reduction applies also to the child's babble, which as he says does not disappear straight away, but becomes gradually less important (p. 29). However, Grégoire's (1937) records of his two sons' speech about the time of their first words indicate that their babble now contains both 'linguistic' sounds - sounds which are functioning as phonemes-

and non-linguistic sounds. In the last quarter of their first year he notes forms that are beginning to acquire semantic function and a great variety of forms that persist from their earlier babbling activities (p. 94 - 101). There are also forms such as 'pəpəpəpəbəbəbə' (p. 89), which is obviously not a word, but still a babble-form, though it contains consonants which are by now phonemes. We may perhaps speculate as to whether purposeful language and vocal play are differentiated in the child's behaviour at the time when the first phonemes appear; whether the child whose utterance changes from a sequence of indeterminate CVCV structure to something like [papa] or [baba] is trying to 'say' something any more than the child who reproduces the intonation of an adult sentence over a polysyllabic utterance. Many of the child's first words may neither imply a wish to communicate nor express an affective state. They take a certain phonetic form, as Crystal (1969) points out, which may be interpreted by the adults around him as "ta", "allgone" or "dadad" (p. 94), but these phenomena may represent merely a more structured kind of vocal play, a form of babble one stage nearer to adult language, and not language proper. In time, an indiscriminate phonetic response to a situation may be replaced by a selected, differentiated response, so that the child says [mama] when he feels hungry or uncomfortable, or [tʃ] when a train goes by. Then we may start to talk of first words, but first phonemes have ^{perhaps} ~~long~~ preceded this stage. Here we may recall that one of Lenneberg's (1967) characteristics of maturationally controlled behaviour was its emergence in whole or part before it

is of any immediate use to the individual (p. 126). Jakobson (1968) makes a distinction between phonemes, which occur in words, and the sounds which the child uses in 'onomatopoeic' imitations of sounds from the natural world - sounds such as the singing of birds, the barking of dogs or the whistle of a train. He maintains that the sounds which the child uses in these imitations are those sounds which have not yet been incorporated into the set of phonemes (p. 25-6). Grégoire (1937) gives some instances from his son Charles: thus, [go] or [gy] for a cock's crow, [rərərərər] for the sound of bells (p. 110). [tətetə] was at first a similar 'onomatopoeic' reaction to the sound or sight of passing trains. It was a coincidental similarity of this utterance to an adult word that led to its eventual acceptance by the parents as "train" (p. 78 - 80). At the same time as the above utterances Grégoire also recorded [papapa] and [wawawa] for the sound of a sewing-machine, and [mam, mam], again, at the sound of bells (p. 110). At this time /p/, /w/ and /m/ were part of his phonemic repertoire. From these specimens it can be seen that these so-called 'onomatopoeic' imitations are neither onomatopoeic, nor, strictly speaking, imitations. None of them suggests the sound that acted as stimulus, and the different reactions to the ringing of bells indicate that it was not the child's intention to produce a specific phonetic response on either occasion. Again, these may be considered as unspecified vocal responses to situations, of which only [tə] came to be learned as a specific response. The wide range of sounds,

both phonemic and non-phonemic, occurring in this type of utterance, suggests that this is another form of vocal play, possibly a development of babbling, and that it is a fruitful source of language development: it provides the child with opportunities to practice and bring under control sounds which he is using in directed utterances as well as sounds which he is shortly to use. This brings to mind again the evidence of Weir (1962, 1966) that language and vocal play are closely linked. Bullowa, Jones and Bever (1964) assume that one of the significant stages in the acquisition of a sound contrast is its appearance in babbling; the other stages being its appearance in discrimination and its first purposeful use (p. 106).

iii Phonological Form of First Words

For a certain period children's words have a highly characteristic form. Syllable structure is of a limited type - CV or VC-and syllables are commonly duplicated. Consonants are predominantly labial and dental, predominantly stops, nasals or semi-vowels (Lewis 1936, p. 169); there is a limited number of vowels. Stern (1924) stresses that the child's vocabulary stays, for a time, within strict phonetic limits. If he does adopt adult words it is those words which ^{are} within his understanding and not 'beyond speech' - in other words, do not use sounds outside his own phonemic repertoire (p. 145). Lewis (1936) distinguishes this phase from the later one when the child begins to extend the scope of his vocabulary and to attempt adult words containing sounds not actually in his

articulatory scope. It is at this later stage that the characteristic phonological mistakes of child language start to appear. The stage of the first words seems to correspond to the grammatical stage of holophrastic or one-word sentences (3.2 vi) which precedes the emergence of language as an independent system, the period of sentence-forming and of language-learning proper (3.3 i,ii). As we have seen, this later period is marked by a demand to know the names of things, and an increase in vocabulary; it seems very likely that the child's deviations from the adult phonological norms ^{should} coincide with his increased awareness of what those norms are.

4.3 Children's Phonology in the Critical Period for Language Learning

1 Phonological Competence

Much of the child's phonemic system has been acquired before the start of syntax learning, and there is evidence that a good underlying phonological competence is acquired relatively early in this period. Jakobson (1968) notes that some phonemic distinctions may appear to be used correctly at first, but then vanish to reappear later (p.23). This may indicate that a distinction is understood at an early stage, but that it may then go out of use in speech even though it is present in the child's competence and possibly his auditory discrimination. Children are often found to be able to articulate sounds in isolation that they do not ordinarily use in connected speech (Weir 1966,p.164; Morley 1957,p.25).The fact that a child can produce a sound that

adults ask him to copy can be taken as an indication that he has the sound within his competence. As was found in connection with syntax (1.2 ii) a child is not generally able to imitate a contrast within the linguistic system before he can understand it. Chomsky (1964) sees further evidence for this underlying competence in the fact that when phonological advances are made they are usually correct 'across the board' (p. 38). Thus although the distinction /b/ - /br/ may not have been observed in the child's speech, when he does master it in speech the innovation is used from the very start in only the correct contexts. There is no over-generalization such that "butter" becomes "brutter", ; once "bridge" is produced with /br/ so are all the other words that have the cluster. Ingram (1968a) argues that most of the oppositions in the child's phonological system are present as early as 2½ years (p. 5). Future researches may possibly discover that the underlying phonological competence is established in advance even of this age.

ii Relation of Child and Adult Phonologies

Traditionally it has been implicitly recognized that after a certain age the speech of young children was a derivation of adult speech. Early linguists failed, however, to see any systematic character in their phonological derivations. Stern (1924) spoke of 'mutilations' of which he claimed to establish six kinds, these being elision of sounds and of syllables, substitution of sounds, assimilation, met thesis and contamination (p. 115). To these forms of error others added omission, approximation or distortion, anticipation and inconsistency (Williams et al. 1937; Wellman et al. 1931; Lewis

1936; Templin 1957; Morley 1957; Spriestersbach and Curtis 1957).

A concentration on the classifying of types of error led many researchers to overlook the relation between the adult sound aimed at and the child's eventual output - the relation, in fact, between adult competence and child performance. Instead, studies tended to examine the development of types of error - for example, the proportion of omissions, substitutions and distortions at any one age. Furthermore the trend towards large scientific surveys, using large numbers of subjects and all the techniques of social science - statistics, control groups, reliability tests and so on - though excellent for the discovery of factors operating on speech acquisition, hid from view the fact that individual children vary considerably in the way that they reflect the adult model language in their own performance. Morley (1957) noticed, for example, that some children are consistent in the substitutions that they make, while others appear to be very erratic (p. 40-1).

Ervin-Tripp (1966) suggests that children's substitutions might be much more usefully described in terms of substitution rules than in a mere list of errors (p. 70). Jespersen had in fact given a lead in this approach as long ago as 1922. From the child-forms 'pell' = "smell"; 'teeze' = "sneeze"; 'poke' = "smoke"; 'tow' = "snow", he extrapolated the rule: "/s/ + a nasal becomes the voiceless stop corresponding to the nasal" (p. 107). His example seems to have been largely ignored until recently when the transformational approach to language re-emphasized the relationship

between underlying and surface forms. An application of transformational mapping rules to his own son's phonological output is carried out by N.V.Smith (1970), who views the child's speech as a systematic transformation of adult competence resulting from the application of 'incompetence rules' (p.3). e points out that one particular feature-complex in the adult system may be subjected to different transformations at different times - changing its realization while preserving its opposition to other phonological units in the system. Such changes are relatively easily expressed in terms of generative phonology but would be outside the scope of taxonomic phonemics or prosodic phonology (p. 3 - 4).

iii Principles in Substitutions

If generative phonology gives the most informative account of the individual child's transformations of adult phonology, it will clearly not be able to account for the more general phonological characteristics of the deviations of large numbers of children without a great deal of complexity. It may, however, be possible to discern certain general principles informing all kinds of child 'incompetence rules'. Two principles, taken in conjunction with what has already been noted of the processes operating in children's language learning, should be able to account for most if not all of the various types of 'error' noted by previous commentators:

a) Auditory Distinctiveness

The same principle that Jakobson has seen to be operating in

the child's acquisition of phonology can also be found in some of the forms of child speech which seemed so bewildering and contradictory to earlier writers. The principle - it will be repeating - is that some distinctive features are more distinctive than others, in the sense that they are more readily perceived by the child, and are consequently more easily mastered in his articulation. Auditory distinctiveness does not only apply to single sounds. Stressed syllables are more easily perceived by the child than unstressed, and can thus be expected to be reproduced by him sooner than unstressed syllables. This was one of the causes suggested for 'telegraphic' speech (1.2 11)

b) Predominance of Early Habits

Connected with the principle of auditory distinctiveness, and perhaps a corollary to it, is the rule of predominance of early habits of articulation over late. This has been noticed by Lewis (1936, p. 178-9), Avram (1962, p. 345). Just as the habits acquired by the child during babbling have some influence on the forms his first words take, so the habits of the early phonological stages have a part in the substitutions of the later stages. Lewis found that where a child substituted a sound in his phonemic repertoire for another sound which was also in his repertoire, in the great majority of cases this was due to a more recently acquired sound being replaced by a longer established sound (p. 179). He noted that many children substitute /s/ for /ʃ/, while others substitute in the opposite direction (p. 181; also Grégoire 1947, pp. 292, 348). Clearly, this would depend on which form was mastered

first.

With these two 'principles' borne in mind it should be possible to define the types of error established by earlier writers in terms of features of adult language that the child has retained and features that he has failed to observe.

iv Omission and Elision

Wellman et al. (1931, p. 65) and Templin (1957, p. 58-9) have established that omission types of error decrease with age, giving way to substitution or errors of defective articulation at later ages. This conclusion is not surprising: since omission of a phoneme represents a stage when no feature of a phoneme is present in the context where the error occurs it would be expected to occur in the early stages of phonological acquisition. It may reflect the absence of the features in his competence or merely an articulatory disability. Higgs (1968) remarks that zero realization of /s/ in /s/ + stop clusters is associated predominantly with early ages (p. 138). Lewis (1936) discusses the elision of segments from consonant clusters (p. 174-7). He divides clusters into 'front and middle' or 'back and middle' combinations - /pl, sp, bl, br, fl, tr, dr, sn, kl, sk, kj, gl, gr/ - and combinations of consonant plus a front continuant - /pw, bw, sw, lw, kw, gw, \int v, p η /. In the case of the first group he adduces the rule that it is always the 'middle' consonant - /l, r, s/ or /j/ - that elides, leaving /p, b, f, t, d, n, k, g, /. The second group always results in a single front consonant - what Lewis calls 'fronting'.

In fact, in Lewis' own terms it would have been easier to find an explanation for the behaviour of the first group of clusters. Every one of the elided consonants is a fricative or liquid, and in every case the consonant that is retained is one that is acquired earlier by the child in Jakobson's order of acquisition. The retained element then is more 'distinctive', and also an earlier acquired articulation. In the second group, where for example "swimming" becomes [ɸimin], we see the features of the two elements in the cluster conflated into one segment, so that very little is elided in this case. The features 'fricative' and 'voiceless' of /s/ are retained, and the feature 'bilabial' from /w/; the only feature that has been omitted is that of sequencing.

Omission or elision of sounds in different positions in the word is associated with auditory prominence. Final consonants are less easily perceived by the child than initial (Pronovost and Dumbleton 1953, p. 262). This is reflected in the findings of Wellman et al (1931, p. 62), Morley (1957, p. 36), Templin (1957, p. 60) that word-initial consonants are mastered before word-final ones.

Stern (1924) distinguishes elision of sounds and elision of syllables (p. 155) Elision of syllables is clearly associated with auditory distinctiveness. Elided syllables in the early stages of child language are nearly always those with weak stress, so that "because" becomes /kuz/ or /koz/, "except" becomes /sept/ and so on. There are also semantic and syntactic considerations (1.2 ii above), and possibly the factor of memory-span at the younger ages.

* Holmes (1927) recorded a tendency in his daughter Molly to reduce all polysyllables to two syllables at the most, so that "automobile" became [ˈabi] (p. 224. Holmes' transcription, = [ˈabi])

v Reduced Phonemic Oppositions

A child may substitute a sound within his phonemic system for another sound not yet within his phonemic repertoire, thereby obscuring the distinction between two items that are contrasted in the adult language. It may be that such substitution reflects a confusion of the two sounds in his discrimination; his competence does not then encompass the features operating in an opposition such as /k/ - /t/. This may be called a 'precompetent' stage. If however the child can hear the opposition but is unable to make use of it - so that he differentiates his response to "tum" and "come", but produces both in the form of "tu" - then we may call this, after N.V. Smith, an 'incompetent' stage. In the latter case, when /k/ comes to be used, it is used universally in the correct contexts. If, however, when the phoneme does appear there is confusion of /t/ and /k/ in words that have /t/ in adult language, a hyper-correct repression of /t/ noted by Jakobson (1968, p. 54), we may suggest this is a result of the child's passing from the precompetent stage to active use of the phoneme without transition through the incompetent state. Jespersen (1922) also refers to this phenomenon, attributing it to the fact that the child has learnt to pronounce the noun t a t i e when "its own acoustic impression is not yet quite settled" (p. 110). In other words auditory discrimination of the phoneme has not preceded its active

use, or at least not preceded by a sufficiently long period of time for the child to become accustomed to adult usage in the sound which he is learning to recognize.

vi Apparent Lack of Contrast

It is possible that a child may be realizing an opposition between two items in his active speech, but that because the feature operating in the contrast is not the normal one for adult speech it appears that there is no contrast. Ervin-Tripp (1966) gives the example of Velten's daughter, who seemed to have no voiced-voiceless opposition. Closer inspection revealed, however, that the child was making a distinction between "bad" and "bat" by contrasting the length of the vowel, so that "bad" became /baat/, as opposed to "bat" with a short vowel /bat/. The child had analyzed the adult system in which vowels are longer before voiced consonants, and isolated the feature of vowel-length before that of voicing (p. 70). Gregoire (1947) found a similar feature being used by his son, so that "voyage" became /voya:che/ and "fromage" /fona:sse/ (p. 331). In these cases the speaker has two contrasting items, thought to adult ears, looking for the feature that they are used to recognizing, the items may not in fact appear contrastive.

vii Substitutions

It is reported that children's substitutions are different at early and at later stages. Jakobson (1968) remarks that fricatives are often replaced by young children with a stop at the same place of articulation (p. 51) and this is confirmed by the findings of

Levina (1940) and of Lyamina and Gagua (1964), reported by Slobin (1966b, pp.372,374-5). Williams et al. (1937), working with rather older subjects, claimed to establish that stops are generally substituted ^t_k for stops, and ^{fricatives for} /fricatives_g, except when a difficult fricative is replaced by the "easier stop" (p.29-30). This seems to be borne out by the finding of Miller and Nicely (1955) that differences of manner of articulation are easier to hear than differences of place (p.349), so that in substituting a sound, the sound with the same manner of articulation as the intended sound will appear closer to the intended sound than one with the same place of articulation but differing in manner.

In the early stages the child substitutes plosives, which are mastered first, for fricatives at the same point of articulation. It may be that the child cannot perceive the feature 'fricative' at this time, or else that he is finding the fricative articulation difficult, and the rule of predominance of early articulatory habits applies. Later, his perception and articulation of fricatives improve, and he has control of the contrast plosive - fricative, but place-of-articulation features may not be mastered completely in performance. In later substitutions a child replaces a sound that he has not clearly heard or that causes articulatory difficulty with one that is acoustically close to it - in other words, that shares a number of auditory features with it. The distinction /f/-/θ/ in English, which is one of the hardest to hear (Miller and Nicely 1955, p.349) is later in appearing for some children. Ingram (1968a) notes that /f/ may be substituted for /θ/ as late as 5½

years , even by children who can produce the inter-dental [θ] as a lisped allophone of /s/(p. 5). In these cases we see that a distinction cannot be heard between two phonemes even by children who have the articulations of the adult norms for the phonemes in active use. Again, early forms predominate at these later stages: /s/ is substituted for /ʃ/ and vice versa depending on which of the forms was acquired first by the child (Lewis 1936, p. 181). Other types of derivations of adult language can be classified as types of substitution, in the sense that a phoneme may be replaced by another sound which is also a phonemic unit, rather than a defective articulation. They are:

Assimilation

A sound may show some of the distinctive features associated with its position in a word, but be influenced in other features by neighbouring sounds in the same word. Ayram(1962] gives some examples from his son's early learning of Rumanian. In the case of /momu/ instead of /pomu/ for "pomul" = "tree" the initial element is influenced in nasality by the following /m/, and in /nanu/ instead of /nasu/ "nasul" = "nose" the second consonant has acquired the nasality of the first. In /gada/ for /gata/ = "it's fixed", the feature of voicing has been assimilated by the second consonant from the first (p. 344). The consonant that is assimilated may share only a few features with the element that replaces it, as in /papo/ for "ch peau" (Ervin-Tripp 1966, p. 70).

Metathesis

Metathesis is usually taken to describe cases where all the segmental

features of a word are present, but a feature of sequencing is supplied - thus 'wops' for "wasp", 'toats' for "toast" (Stern 1924, p. 155). The term could also be used to describe cases where all or most of the features of a word are produced, but their unusual sequencing produces new forms. Thus in Avram's records, /gutu/ in place of /duku/ (a name) gives the voicing features in their original sequence, but the features 'dental' and 'velar' are juxtaposed (p. 345). /maga/ is a form of /ban̥ka/ "bench", where the opposition of features 'labial' and 'velar' survives, but the feature 'nasal' is transferred from the second to the first consonant, and the feature 'voiced stop' from first to second (p. 344).

viii Approximation or Distortion

With approximation we are still concerned with the replacement of 'intended' sounds by other sounds, but in these cases replacement is by a sound that is not one of the child's phonemes, and not a standard speech-sound in the adult language. The term 'approximation', used by Spriestersbach and Curtis (1957) is more suggestive of the nature of these sounds than 'distortion'. The majority of approximations represent the child's articulation moving nearer to the adult norm for a sound than is the case with phonemic substitutions. As Ingram (1968a) and his associates have shown, articulation development proceeds along the lines of increasing control of the features of the adult system. The child's realization of an adult sound or cluster approximates at every stage nearer to

the adult norm. The data obtained from a group of normal speaking children in Edinburgh provide a valuable picture of development, particularly of consonant clusters, and demonstrate a striking regularity in the evolution of sounds, where it seemed previously that development was largely random and vacillating. There was found a marked similarity, for example, in the evolution of

/s/ + plosive clusters:

/ /	2½	3	3½	4	4½
/sp/ in "spoon" *	p ^h	p	ʃp	ʃp	sp
/st/ in "stamps"	t ^h	t	ʃt	ʃt	st
/sk/ in "scarfs"	k ^h	k	ʃk	ʃk	sk(p.2

This is a simplified and over-generalized picture*, but it displays many noteworthy points. At 2½ years the realization of these clusters is not differentiated from the normal realization of the single voiceless, aspirated plosive which most children of 2½ years have mastered. There is thus no opposition of /sp/ -/p/, /sk/ -/k/, /st/ -/t/ in the child's performance. At the next stage there is differentiation between two bundles of features, the feature 'unaspirated' characterizing /sp/, /st/ and /sk/ at this point. The child has now a three-way plosive system, consisting of voiced plosives /b,d,g/, voiceless aspirated plosives /p,t,k/ and voiceless unaspirated plosives corresponding to adult /sp,st,sk/.

* /sp/ may be realized by some children as a bilabial fricative [ɸ] (Holmes 1927, p. 225), though this does not seem to be true of /sk/ and /st/.

Subsequent stages witness the appearance of a fricative and the progressive use of more adult-type features in the fricative up to the mature stage. In the clusters Plosive + /l/, Plosive + /r/ and /s/ + Nasal, different patterns are observed, but the same process underlies the development of all these clusters, namely the emergence at each developmental stage of more features of the mature system than were present in the preceding stage.

Ingram (1968a) comments:

"Once the student has a deeper understanding of the stages and the maturational features of the various groups and sub-groups, findings previously regarded as inexplicable and inconsistent acquire a new meaning. For example, why should a single child use such a wide variety of substitutions as the following: $[l, w, n, g]$? Place the segment in context, and the reason is obvious; $[l]$ in $[lɪ:p]$ 'sleep'; $[w]$ in $[w(w)ɪmɪn]$ 'swimming'; $[n]$ in $[nəʊ]$ 'snow'; $[g]$ in $[gɒdʒər]$ 'soldier'." (p. 4)

Hutcheson (1968), using material from the same survey, presents the acquisition of features in the cluster /br/ in tabular form:

Feature	2	t	b	w	f _g	bv	br	bl	bw	br/b
labiality			+	+	+	+	+	+	+	+
voicing			+	+		+	+	+	+	+
stop	+	+	+			+	+	+	+	+
alveolarity		+			+			+		+
central approximation or tap				+	+		+		+	+
sequencing					+	+	+	+	+	+
score (i.e. number of features)	1	2	3	3	4	4	5	5	5	6

(p 40)

In all these cases can be seen the value of treating a cluster as one unit, a bundle of features, and not as separate items, one or the other of which may be elided, substituted or distorted.

4.4 Apparent Irregularity of Phonological Progress

Given the orderly and lawful advance that Jakobson and Ingram have shown to characterize phonological development it is perhaps surprising that earlier investigators viewed child phonology as a highly confused subject, until the attention is drawn to a number of factors that serve to mask and confuse the systematic advance of phonology.

i Temporary Disappearance of a Contrast or Feature

Jakobson (1968) notes that some of the more difficult sounds in a language, the sounds that are generally acquired at a relatively late stage, may appear in the child's first phonemic utterances, but then disappear, to re-appear considerably later. (p. 23).

Hutcheson (1968) also notes that an appropriate feature that a child has mastered may vanish temporarily from speech while other features are brought under control. The medial sequence in "chimney" may develop in stages as /-mb-/; /-nd-/; /-md-/; /-mn-/ (p. 40). In the second stage the feature 'labial' disappears, while the feature 'alveolar' is learnt in this position. Later the two features are combined in the correct sequence, though with nasality in only one segment.

ii Instability of Pronunciation

In vocabulary, the child passes through a phase, possibly more than

one, where the articulation of words may be very unstable. Métraux (1950) notes that at 36 months words may be first correctly, then incorrectly produced within the same conversation (p. 44). Grégoire (1937) has examples of the same thing in his sons, noting at 3½ years rival forms of "bonjour" - [bayou] and [bazou] (p. 281). Ervin (1966) also reports unpr dictable forms of words at a so ewhat earlier age, between 2 and 2½ years, when "orange" ay be produced as "orinch, orinz, orints, orins, orinsh", byy the same child (p. 175).

Children also pass through a stage of 'relapsing articulation', which represents a regression of the child's articulation and perhaps other aspects of his language to an earlier less developed state. It may be due to stress, excitement, jealousy of a younger child, or merely attributable to the child's pleasure in imitating, or varying his style of speech, which Jakobson (1968, p. 17) noted. Morley(1957) observed a period of relapsing articulation in approximately a third of the children in her study (p. 22-3)

iii General Assimilation

Stern (1924) defines general assimil tion as the preference of a child for certain sounds over others, which he replaces with the preferred forms (p. 157). His own son passed through a stage where a number of words were started with velar fricatives, even where the sound that was replaced had been acquired early on and had been heard in the correct form of the same word. Grégoire (1947) observes in his son Edmond, at the beginning of his third year, a

similar preference for /t/ and /d/ over other phonemes - /ta:ti/ for "parti"; /tavet/ for "bavette" (p. 326). Avram's (1962) son showed a preference for labials long after his phonemic system was established, giving forms such as /papaku/, /kapapu/ for /kapaku/ = "blanket"; /papunu/ for /səpunu/ = "soap" (p. 346). Lewis (1936) refers this again to the predominance of early habits, whereby the words are made to fit a familiar pattern (p 182-3). It is a form of over-generalization in the same way as the tendency of English children to fit diminutive endings in 'y' or 'ie' to many words, creating "buttie" or "buppie" for "butter", analogous to "doggie", "Daddy". Ingram (1968a) finds a tendency at a relatively mature state of phonological development to substitute one fricative indiscriminately for all others; the fricative is commonly /h/, giving 4-year old forms /krihməs/ "Christmas", /pohman/ "postman". This was also noted by Morley (1957, p. 37).

iv Persistence of Earlier Forms

When an innovation is made in the child's phonemic system, there may not be a complete surrender of all earlier phonological forms. Ervin-Tripp (1966) considers that the process of change may involve some 'fore-runner' words that introduce a distinction not made elsewhere (Ervin-Tripp 1966, p. 72). An example of this may be found in the speech of Lynn (4,5) in the Nursery group in the present study. She produced /θ/ two or three times quite accurately in one word - "Saint Osyth" - but in all other places used /f/ for the sound (see IV, 4.2 ii). Conversely, after a systematic change, some archaisms may survive, perhaps because of high frequency and

functional load of a particular ^{form}, perhaps because the form has been adopted by adults, or because the child conserves forms of baby-talk for special purposes and special audiences. Morley (1957) observed that more difficult words acquired at relatively late ages might have a more 'correct' form, while words acquired earlier might continue to be used with defective sounds (p. 39). Hutcheson (1968) notes that developing speech is very unstable, and that both early and later realizations of phonological and semantic items may co-exist in speech for relatively long periods. So cases of so-called 'relapsing articulation' may then be due to quirks of sampling, where a more recent form is sampled first and an earlier form sampled after (p. 39).

v Difficulty of Constructing Synchronic Model

All these considerations make the task of constructing a purely synchronic model of the child's phonological system at any one stage before maturity a very complex task. A child's progress in language is seen as the passing from one unstable state to the next (Lenneberg 1967, p. 376), and each child progresses at a different rate and with differing degrees of regularity. It would seem that a diachronic model is not only a good deal easier to construct where more than one child is involved, but also a good deal more informative, particularly with regard to the development of individual sounds.

4.5 Non-Structural Characteristics of Child Phonology

i Intrusive Consonants

As well as omitting and substituting consonants, children sometimes

introduce 'intrusive' consonant into less familiar words. This may not be a purely childish trait: Sivertsen (1960) records some excrescent stops in Cockney, and notes that they seem to be traditional forms - /ə'krowst/, "across", /'rɒŋk/ "wrong" (p. 121). The form /'bɑdrɪgɑ:d/ used by a 9-year old in this study (III, 5.8) may be a result of either of these sources of non-standard vocabulary. Ingram (1968b) gives some examples produced by children who enunciated the words in an extra slow, emphatic manner - /dʒelə/ "yellow", /tɪ:fθ/ or /tɪ:θf/ "teeth" (p. 3). Holmes (1927) noticed the presence of a medial sequence [n·t] in his daughter's speech for a short while: the intrusive [t] expressed length of the nasal, and the sequence was later replaced by [nn] as in "pony" - [pon·tɪ] , later [ponni] ; "tummy" - [tʌn·tɪ] , later [tanni] (p. 223). Grégoire's son (1947), at just over 3 years, introduced an [h] initially before many vowels, apparently for emphatic effect. Thus, 'hun bateau'; 'qu'est-ce qui ha?' (= "Qu'est-ce qu'il y a?"); 'fais-le haller' (p. 321).

ii Dental and Palatal Articulation

Jakobson (1968) refers to the presence of dental articulations in the early stages of language, and explains their predominance in children's articulation as a result of the auditory 'lightness' of dentals , and particularly palatalized dentals (p. 88). Both dental and palatal articulations persist for some time in children, up to the age of 4½ or 5 (Ingram 1968a, p. 4) and later in this study, though diminishing in frequency beyond that age. Ingram

argues that the prevalence of palatal contoids among younger children, and of palatalized contoids among older children, may be due to the fact that the child has not yet mastered the delicate movements associated with tongue-tip articulations: it is the bulk of the tongue that is used in these articulations rather than the tip or tip and blade (p. 4-5). The same may be true of dental and dentalized articulations, and especially dental or lisped /s/, which probably requires less co-ordination of the tongue muscles than the mature [s]. Lispings is noticed by Métraux at 30 months and after (p. 42).

iii Other characteristics

Some phonological effects may be due to the child's imperfect control of transitions from one segment to the next, particularly in the articulation of clusters. In the development of Plosive + Liquid clusters outlined by Ingram (1968a) can be seen stages where the continuant is lengthened and, at the 4-year stage, where an intrusive [ə] may appear - indications that the child has not yet achieved fluency in what are relatively difficult articulations:

	2½	3	3½	4	4½
/tr/ in "train"	t ^h	tw	tw	trr	tr
/pl/ in "plane"	p ^h	pww	tl p ^v pw pr	pll pel	pl

Labial consonants may have labio-dental articulation if the child is smiling broadly while speaking. He has not learnt at this stage to smile and produce normal bilabial articulation at the same time (Ingram 1968b, p.3).

Lengthening of vowels is found at an early stage of development. Métraux (1950) calls this "over-pronunciation" of vowels, and notes its occurrence at 30 months - [flɔʌwɐr] for "flower"; [dɔwɔg] "dog" (p. 42). Jones (1967) considers disyllabic glides such as in the words [tʰɔʊɪz] "toys"; [tʰɪɪz] "tears" to be more frequent in the speech of young children in the London area than in adults' speech, and to be associated with a more equal and syllable-based stress (p. 96)

4.6 Prosodic Characteristics in Child Language

i Intonation

Few writers have dealt with the subject of intonation in child language, and those who have considered it have mainly confined themselves to the early stages. Lewis (1936) stresses the part that intonation patterns in adult speech play in the child's responses to speech. In his opinion it is the intonational aspect of speech to which the child first responds; intonation and segmental phonemes are at first undifferentiated, but when differentiation takes place it is the intonational rather than the phonetic form of an utterance which dominates the child's response. In later stages the phonetic form becomes more important, though the intonational pattern is still significant (p. 122). Crystal (1969) agrees with Lewis, and elaborates a little further his distinction between the affective function of intonation in the early stages, and its more linguistic character, related to grammatical structure, which emerges in the period when sentences start to be formed. At

2½ years, Crystal believes, the non-segmental or intonational system is near enough to the adult system to pose no further problems of classification (p. 47). However, Crystal's concern was only with finding a means to classify and describe features of infant and child intonation, not to trace the development of intonational contrasts. It seems that the latter task is by no means a simple one. Those writers who have commented on intonation at later than babbling stages have felt the need to tread warily. Métraux (1950) reports that at 30 months a child's inflection, which has seemed controlled up to this age, becomes suddenly unstable and ill-controlled (p. 42). Weir (1966) finds a contradiction in the apparent early use and control of intonation patterns from adult speech on the one hand, and the lack of any systematically contrasting patterns in the intonation of a 2-year old child (p. 157). She mentions Ohnesorg's finding that a child's intonational patterns are usually caricatures of adult patterns, and predominantly of the contour associated with a question requiring a "yes" or "no" answer. Miller and Ervin (1964) similarly report that although the 2-year olds in their study gave the impression of having pitch-patterns under control, yet in fact the rising and falling intonations used to distinguish questions and statements were the only prosodic features consistently found at this age. They suggest that even the systematic use of this contrast may arrive later than is generally supposed (p. 28-9). It would seem that children adopt some types of standardized pitch-contours early on, but that they do not become grammatically

contrastive or attached exclusively to the appropriate type of sentence until some time later, perhaps after other types of intonation have been learnt. How and when the intonation patterns of children approach the mature types of adult speech are questions that have hardly been asked and are far from being answered.

11 Rhythm and Stress

One feature of child speech that has received more than passing attention is the distinctive rhythmic pattern of speech in this period. Syllable-timed rhythm, rather than foot-timed rhythm, is characteristic of children up to 3 years (Ingram 1968a, p. 5), particularly in polysyllabic words, where each syllable tends to receive equal stress - /'bʌ'tə'flaɪ/. This is also commented on by Jones (1967, pp. 96, 115). Holmes (1927) notes that differentiation into strong and weak-stressed syllables did not take place for his daughter until 22 months (p. 221). After the appearance of weak syllables inter-vocalic consonants became less prominent and tended to be more easily elided (p. 223). It is possible that where the child takes care not to elide^a medial consonant this results in its lengthening or doubling, as in Holmes' examples [ponni] ; [tanni] "pony", "tummy" (p. 223). Jespersen (1922) describes this phenomenon as the splitting up of whole words into separate component syllables, thus 'Shef-field', 'Eng-land' (p. 108). This doubling or lengthening of medial consonantal units is found to be typical of Nursery speech in the present study (cf. IV,2.23).

iii Other Prosodic Features

As Crystal (1969) says, very little is known about the emergence in children's language of systemic contrasts in prosodic features. The same is true of non-linguistic or 'paralinguistic' features (Crystal and Quirk, 1964) such as force, voice quality and so on. Métraux's (1950) interesting profiles of speech behaviour in children from 18 to 54 months show that the child's voice quality may vary greatly from age to age. At 18 months, for instance, she notes much inconsistency in voice and some experimenting in pitch (p. 39). At 30 months the voice has a 'firm base', but ranges to extremes of volume (p. 42). At 42 months, the normal speaking voice is a 'high full-volumed yell', though whispering is also common (p. 46). At 54 months the voice is firm and 'well-modulated' (p. 50). None of this tells us at what point or points there is any systematic pattern to variation in voice; whether the child whispers for the pleasure of using a new voice feature, or whether whispering is systematically associated with, for example, a 'conspiratorial' context. At 42 months Métraux records that the rate of speech is faster than in previous stages. In tempo, however, we can probably not expect much systematic variation until articulation is relatively mature. In the early stages tempo is probably dependent on articulation; in the later stages the roles are reversed, and accuracy of articulation will vary according to the tempo of an utterance.

5. Tests of Children's Linguistic Abilities

5.1 Articulation Tests

- i A number of studies have set out to obtain a picture of children's progress in speech production by means of tests of articulation. Most of these studies used large samples of children: the largest single group was Templin's (1957) 480 boys and girls, though Morley's (1957) observations were based on sample groups from 1,142 children born in Newcastle-upon-Tyne in May and June 1947. The backgrounds of the children also varied. Templin's children were carefully selected to give a representative sample of the United States population in terms of socio-economic status, and were rigidly controlled from the point of view of age, sex, defective hearing, family con tellation and twinning. Morley's 'normal' group, on the other hand, was strictly random - every tenth child from the original 1,142. No specification was made of its socio-economic composition. The children tested by Poole (1934), Wellman et al (1931) and Williams et al (1937) were drawn from university nursery schools and kindergartens and were predominantly from the upper socio-economic grades. Henderson's (1935) study, and the studies discussed by Sprie tersbach and Curtis (1951), were based on speech-defective children. The age-range of the children also varied. Henderson's subjects were aged from 3,1 to 18,7; Métraux's (1950) preschool ^{children} were aged from 18 to 54 months; Wellman's subjects were aged 2 to 6 years; Poole's, 2,6 to 6,6; Williams', one month to 6,6; Tem lin's, 3 to 8 years, and Morley's subjects

were visited and tested at the ages of 3;9; 4;9; 6;6. Strangely, since the language tested was in every case English, the greatest variety is found in the number and type of speech-sounds which were tested. Wellman et al. set out to test 133 items, including 19 vowels, 66 single consonants and 48 consonant 'blends' or clusters (p. 30). In fact 10 of these sounds were not completely tested, so that assessments of accurate articulation were based on 123 sounds. The consonants and clusters were tested in word-initial, medial and final positions. Poole's test was of articulation of consonants, of which she specified 23 in all possible initial, medial and final contexts - a total of 62 elements. Henderson used the same consonant elements, with the exception of final /l/ which she classified as a vowel. Williams et al tested 85 sounds on a scale of intelligibility (p. 55) and 104 in a study of sound substitutions (p. 26). They tested consonants in word-initial and word-final position only, arguing that the laws of English syllabification are such that a consonant may occur only at the beginning or at the end of a syllable (p. 26). No complete list of sounds tested is presented, but the 48 items for which substitution is most frequent are presented (p. 22-5). Templin's test involves the largest number of speech-sounds - 176 in all, comprising 17 vowels, 69 single consonants and 71 clusters. The difference between the vowel items in this study and Wellman's is not important, as Templin points out, since vowels attain a high level of accuracy at the earliest ages tested

(p. 23). Morley bases her assessments of articulation on 23 single consonants and an unspecified number of consonant clusters. Ingram's articulation test contains 24 single consonants and 30 clusters. Neither Morley nor Ingram set out to test consonants in all possible positions within the word. Disagreement on the number of sounds which it is worth testing is due in part to the status given by different researchers to some of the less frequent consonants and clusters of English. The Wellman study does not consider final /ʒ/ or medial /ŋ/. Poole did not test the affricates /tʃ/ or /dʒ/, though she did test final /ʒ/. Henderson classifies final /l/ as a vowel though Poole treats it as a consonant, and these two study only single consonants. Templin, on the other hand, includes in her test every possible English sound, including initial and medial /ʌ/, which is considered to have phonemic status, and clusters such as final /lθ/, /zm/. Morley's account - which does not include a standardized test of articulation ability, but relies on phonetic analyses of children's speech based on the use of consonants and vowels in single words - does not consider /ʒ/ among the consonants. This accounts for the difference between her total and Ingram's. At the other extreme from Templin, Spriestersbach and Curtis devote their attention to the misarticulation of certain specific sounds - /s/, /r/, and clusters containing these sounds. Other differences can perhaps be attributed to differences in the type of English taken as the standard for each test. This varies from Edinburgh and Newcastle

English to various forms of American English. This affects mainly vowels, though Templin considers /M/ as a phoneme in her test, a sound which no other test takes into account.

ii Techniques

Most of these tests were based on single-word utterances, which were elicited either by questions or by stimulus pictures or, for younger children, toys and objects. Wellman et al. avoided asking the subjects to repeat specific words, but Templin found, in a study preliminary to her monograph, that for total articulation scores there was no significant difference between scores for spontaneous and repeated utterances (1957, p. 24). Morley had intended to use sentences and nursery-rhymes as material for her study, but found that consonants 'deteriorated' too much in these contexts (p. 25).

iii Findings

Compared with the unanimity general among child-linguists with regard to the onset of speech and early milestones such as the beginning of sentence-forming, there is some confusion as to the age at which articulation is mature - similar to the confusion noted in 3.3 vi concerning the completion of the phonemic system. Métraux considers vowels to be accurately produced by 90% of children at 30 months, and consonants by 90% of children at 4½ years (p. 38). Hutcheson (1968) sees the age at which a child achieves mature articulation as varying between 3 and 4½ years (p. 38). Morley speaks of 'normal articulation' being achieved by 42% of

children at 3,9, by 64% at 4,9, and by 95% at 6,6 (p. 26-7). Davis (1937, quoted by McCarthy 1954, p. 537) gives the age of 'perfect articulation' as 5,6 for 75.7% of children, and 6,6 for 90.9%, a finding very close to that of Morley. Poole also reports that at 6,6 the median child in her sample articulates all sounds correctly (p. 161). Templin, however, although agreeing with Métraux that vowels are at a high level of accuracy among 3-year olds, places the age at which a similar level is attained in consonant production at as late as 7 years, and for clusters, at 8 years (p. 32). This finding may be partly a result of the number of difficult and rather rare consonant clusters in her test.

Other findings of these surveys have been mentioned in places above. The main points, on which there is essential agreement, can be briefly summarized.

- a) Vowel production is accurate from an early age - 3 years or earlier. Any substitution or confusion among vowels is most likely to occur between short vowels such as /i/ and /e/, or /e/ and /æ/ (Williams, 1937, p. 32).
- b) There was a fixed order of difficulty within the groups or classes of sounds. From easiest to most difficult this was: Diphthongs, vowels, consonant elements, double clusters, triple clusters
- c) Within the consonant group a similar order prevailed: nasals, plosives, semivowels, fricatives. Some studies classified semivowel and fricatives, including /l/ and /r/, as one group of sounds,

which were found to give the most difficulty in articulation. Templin recorded twenty five times more errors in fricatives (excluding semivowels, /l/ and /r/) than in nasals (p. 56-8).

d) Initial sounds were produced more accurately than medial, and medial more accurately than final, in every case except one, where Wellman found that fricatives were articulated slightly more accurately in medial than initial position (p. 60-2). These differences according to position in the word cease to obtain after the child has achieved 90% accuracy in consonant production (Templin 1957, p. 43-4).

e) There is less agreement with respect to the accuracy of voiced and voiceless consonants. Morley (1957) thought that voiced consonants were generally less often defectively produced than voiceless (p. 37). Templin found that while voiced plosives were more accurate than voiceless, the reverse was true of fricatives (p. 60) and that voiceless consonants were more accurate overall. Wellman et al., however, found no significant difference in accuracy between voiced and voiceless elements (p. 64). Williams reported a "strong but not universal tendency" among children to substitute voiced consonants for their voiceless counterparts and vice versa (p. 29).

f) There is a high level of agreement between various studies as to the order in which individual consonants emerge in children's speech. Templin compares her findings with those of Poole and Wellman. In a comparison of the ages at which 75% of children

produce a specific consonant sound, though there may be a difference in age of up to 3½ years (Templin gives /r/ as 75% correct at 4 years, Poole at 7,6), yet the order in which the sounds attain this degree of accuracy is substantially the same for the three studies (p. 53).

g) The sounds that give children most trouble after the age of 5 years are /θ, s, r, ʃ/ and clusters with /l/, /r/ and /s/. Difficulty may also be encountered with /ð, z, ʒ, f, v, k, g, t, dʒ/ (Morley 1957, p. 38).

h) There is a steady increase in articulation scores, and a steady decrease in the numbers of errors made with age in all these studies. Spriestersbach and Curtis report, however, that older children with defects of articulation show little significant change in the mean number of errors per child after a certain age (Grade 5 in the American School system, approximately 10 years). Misarticulations, which are inconsistent among younger children, tend to become more consistent as the child grows older (p.484).

iv Drawbacks of the Statistical Survey Approach to Articulation

Tests of articulation give a measure of something that is neither competence nor performance, but rather a particular ^{type} of performance in an experimental situation. This is not to deny the value of an experimental approach to language. Chomsky (1964) considers that only experimentation "of a fairly indirect and ingenious sort" can provide evidence for formulating a true account of the child's underlying abilities in language (p. 39). However, the tests considered in this section have been relatively crude

measurements of a quantitative rather than a qualitative kind. The purely right/wrong system of scoring used by Templin(1957) and earlier investigations does not take into account developmental feature such as those discussed by Ingram (1968a), Hutcheson (1968), Higgs (1968). A more sensitive scoring method such as Ingram has developed is necessary if much valuable information concerning phonological development in children is not to be overlooked. A numerical score obtained on an articulation test is of little value in the construction of a picture of an individual child's articulatory development - though it may be a useful diagnostic tool for the speech therapist. Each child's score can be expected to increase with age, but will not take into account factors such as relapsing articulation, or the presence in his speech of features from different stages of development at the same time. Some children substitute different sounds for the same consonant in different words (Morley, p. 40-1) In such cases a lot will depend in the one-word articulation test on which words are used to elicit particular sounds.

There are, as Lewis(1963) pointed out, serious obstacles to the establishment of norms for any particular age-group of children . Individual children and children's environments vary too greatly for this (p. 106-7). We have seen the disagreement between observers and testers on the ages at which the complete phonemic system and mature articulation are achieved. These may represent real differences in linguistic achievement between samples of

children from different socio-economic backgrounds, from different historical periods (these tests cover more than 30 years, from 1931 to 1968), and from different nationalities. It has been found (Williams et al 1937, p. 16) that articulation is much less directly related to mental age than measures of vocabulary, word usage or sentence complexity, and is therefore harder to relate to other facets of linguistic development. Articulation seems to be best measured, not in terms of chronological age or even mental age, but in terms of sequential stages, each stage being^{related} most directly to the stage preceding it. Again, analysis in terms of features would appear to be the most informative approach.

Perhaps the most serious criticism of these studies, with some exceptions, is that although they used impeccable statistical and experimental techniques they failed to ask any really searching questions. Analyses of the results obtained concentrated on the statistical rather than the phonological implications, merely reporting which sounds gave most trouble and not why they gave trouble. Ervin-Tripp (1966) comments:

"These studies did not test any useful hypotheses: the results achieved were not commensurate with the methods used." (p. 55)

One further consideration which makes it difficult to compare results in all but a general way is the diversity of types of English taken as the norm for children's articulation. In addition the classifications used in the investigations varied. Wellman et al, for example, considered only stops, nasals and fricatives in

the consonants, and included /w,j,l,r/ among the fricatives. These four elements were classified as semivowels by Templin.

5.2 Measures of Speech-Sound Discrimination

- i Tests of children's ability to discriminate between the sound-units of speech have been largely directed to two areas of investigation. On the one hand tests have been designed to obtain measures of speech-sound discrimination as a linguistic ability for which quotients and age-level norms can be established, rather like I.Q. testing. The emphasis has tended to be on total discrimination scores, rather than on types of discriminatory error, areas where discrimination is liable to be confused, or the development of this ability in terms of features perceived. On the other hand, studies have been concerned with the hypothesis that defects of articulation are somehow connected with impairments in auditory discrimination. Discrimination of speech-sounds, as well as other related auditory skills, were tested in this connection. Some studies combined both of these aims. Few researchers, however, have considered children's discrimination in relation to individual sounds or classes of sounds in the way, for example, that Miller and Nicely (1955) analyzed some of the perceptual confusions present in the English consonant system for adults. One study from the Soviet Union has given a lead in this direction - that of Schvachkin (1958).

11 Normative studies

The earliest test of speech-sound discrimination seems to have been that of Travis and Rasmus (1931). They tested discrimination of consonants and vowels in 366 pairs of nonsense syllables, each pair differing in one English sound. Subjects were asked to make judgements of 'same' or 'different' on each pair presented. The subjects were children and adults from the age of 5 years upwards; at each level a group of normal speakers was matched with individuals with functional disorders of articulation. The test was a long one and, as Templin remarked, listening to 366 pairs of nonsense syllables and making judgements about each is not only monotonous and fatiguing, but also demands considerable intellectual maturity: unless the subject co-operates throughout the whole of the test, the results cannot be considered valid (p. 61). Templin (1943) therefore modified the test to make it less taxing for young children. While adding nonsense words that tested discrimination of consonants in final position, which the test of Travis and Rasmus had not done, she shortened it to 200 items by omitting vowels and some of the pairs of consonants which gave little information about discriminatory ability - being rarely confused. The number of discriminations to be made among nasals, plosives, semivowels, fricatives and clusters was roughly proportional to the errors in articulation of these types of sound among pre-school children in a previous study. She then reduced this test to 70 items, omitting those pairs which had been missed or passed by only 10% of the total group. The short test was found to have

a high correlation with the results of the full test(p. 129).

A similar short test of only 50 pairs was used in her (1957) study with 5 to 8-year olds. For the younger children in this study she considered some more concrete and enjoyable test to be called for. Mansur (1950) had first constructed a picture-type test for use with younger children. This test was rather elaborate. Picture-cards were prepared, each card having four frames in which were depicted pairs of objects. The objects were designed to elicit similar-sounding words, so that on one card the four frames would depict i) pole - pole ii) pole - bowl iii) bowl - pole iv) bowl - bowl . The child was then shown the card and asked to choose, by pointing to the appropriate frame, which pair the tester was saying. The subject was thus, as Pronovost and Dumbleton (1953) point out, required to give judgements of order as well as of a same/different type(p. 268). This did not allow for the phenomenon of visual reversal found among some children. Pronovost and Dumbleton revised the test by eliminating some of the unlike pairs on the test card, and added further sounds to be discriminated, increasing Mansur's 20 pairs to 36. Templin (1957) used a much simpler form of test, presenting the child with a card on which were only two illustrations, one of which represented the stimulus word and the other a word differing by only one phoneme. 59 pairs of words were used. Templin obtained three scores on this test, and found that a score which took into account the child's familiarity with the words to be tested gave a more satisfactory measure of

discriminatory ability than the other two (p. 70). For this reason it was concluded that the test was a better instrument for 4-year olds than 3-year olds, whose vocabulary was more limited. A further type of picture-test was devised by Schiefelbusch and Lindsey (1958). In this test each card presented to the child contained illustrations of three words, two of which were alike in the initial or final sound of the word, or in that the words rhymed. The third word contained a sound frequently substituted for the sound to be tested. Three ways of testing were employed, each of which required the child to identify the two words that 'sounded alike'. A limited number of sounds was tested - /s,l,r,f,θ,v,t,g,k,t / (p. 153).

These studies were all rather limited in aim, perhaps understandably so; since so little experience in the field of speech-sound discrimination was available to the researchers, they were more concerned with the techniques and problems of testing this ability than with the wider application of any results obtained.

Findings

What information there is about the relative distinctiveness of sounds to English children from these studies is unsystematic and somewhat fragmentary. Travis and Rasmus (1931), whose youngest subjects were 5 years old, report that the sounds that were hardest to discriminate were /fa/-/θa/ and /va/-/ða/. There were no errors at all on the pairs /ga/ -/ha/, /ka/-/ma/, /tʃa/-/ma/ and /ja/-/fa/ (p. 222). Pronovost and Dumbleton (1953), reporting

on the results of their own test and comparing them with those of Mansur(1950) and Haroian (1951), found that the relative order of discriminatory difficulty of sounds was approximately the same in all three studies. In their own test, final plosives were less easily discriminated than initial ones, but this order was reversed with the pair /tʃ/-/ʃ/: "chip"- "ship" was harder than "watch"- "wash". The hardest pair was "cone"- "comb", involving a change of place of the fricative feature in final position (p. 262). Vowel sounds were found to be discriminated neither better nor worse than consonants; some were hard, others were easy (p. 263). Templin (1943) merely reports that like Travis and Rasmus she finds the pairs /fa/-/θa/ and /va/-/ða/ the hardest to discriminate (p. 132).

iii The Relation of Discrimination to Articulation

The studies of Travis and Rasmus(1931) and of Schiefelbusch and Lindsay(1958) cited above are only two of a great number of attempts to explore more thoroughly the connection between defective articulation and auditory discrimination. The former study found that though there were no particular sounds that caused speech-defectives trouble as a group where auditory discrimination was concerned, yet there was a definite connection between misarticulation of a speech sound and its faulty discrimination in an individual. Of the pairs misheard by the 20 severer cases of defective articulation in the study, 63% contained sounds with which the same cases had articulatory difficulty (p. 222). Other studies tried to follow this clue, attempting a closer definition of the link between

misarticulation of speech-sounds and auditory abilities, including not only speech-sound discrimination but also related skills such as pitch discrimination, tonal memory and other musical talents, and between defective articulation and motor control. Métraux(1942), Anderson (1949), Kronvall and Diehl (1954), Schiefelbusch and Lindsey (1958), Cohen and Diehl (1963), D.Prins (1963) all established that there is a definite correlation between depressed scores for speech-sound discrimination and defective articulation. Other studies, starting with that of Travis and Davis (1927), and including Mange(1960), Eisenson, Kastein and Schneidermann (1958), Sommers, Meyer and Fenton (1961), T. Prins (1962a,b) and Bergendal and Talo (1969) likewise established that cases with defects of articulation are generally inferior to normal speakers on some tests of auditory ability - pitch discrimination, tonal memory, discrimination of loudness, timbre and time, word synthesis and auditory flutter fusion (Mange 1960). Speech-defectives are found to perform less well than normal speakers on tests of motor control by, among others, Bilto (1941), T. Prins (1962 b). However, when investigators have attempted to define these correlations more closely, results have emerged that appear inconclusive and inconsistent. Stewart (1968) discusses some of these apparently contradictory findings. T. Prins and D. Prins give some clue to the reasons for this, in emphasizing that speech-defectives, who had been traditionally treated as one homogeneous group, were in fact heterogeneous, and that different

sub-groups can be found to perform differently on tests of linguistic and auditory ability. A sub-group composed of cases who inter-dentalized /s/ and /z/, for example, tended to have high intelligence, to come from higher socio-economic grades, and to have a low number of articulation errors on sounds other than /s/ and /z/ (1962a, p. 156). A second group were characterized by 'phonemic substitutions' - substituting for an intended sound a sound that was a phoneme within their system, and that differed from the intended sound in only one feature - predominantly the feature of place of articulation, which was altered by one degree of place, from bilabial to dental, dental to velar or vice versa. This group showed very poor scores on a test of speech-sound discrimination (the Wepman test) which tested contrasts depending on differences in place of articulation (D. Prins 1963, p. 385). A third group, which showed a high proportion of omission errors, was tested in another study (T. Prins 1962b) on a series of tests of motor ability and auditory memory, along with other sub-groups of speech-defectives and a control group. It emerged that the group who made omission-type errors was markedly inferior on this test to the control group, while other sub-groups showed no such inferiority (p. 167). A fourth possible group, which was not investigated in detail, was characterized by substitutions of sounds that were non-phonemic (1962a, p. 157). Crookes and Greene (1963, quoted by Stewart 1968, p. 126) identified two types of cases with articulatory disorders. One was a 'motor disordered'

group in whose speech a large proportion of omissions and substitutions reduced conventional sequences of language to simpler forms. This group is perhaps the same as the third group identified above by T. Prins (1962b) ; individuals in this group had poor motor control but otherwise normal language development. The second group was a 'language disordered' group, whose whole language^{development} was generally retarded, and whose articulatory defects consisted of unpredictable mistakes both in the order of sounds within words and the order of sounds within sequences. This represents a possible fifth sub-group.

From these studies it becomes clear that even quite serious deficiencies in motor control, though they may produce noticeable defects of articulation, do not hinder the development of higher levels of language organization*. Other cases of defective articulation may be connected with disorders of the total language system, which accounts for the well-established link between defective articulation and poor auditory discrimination, both of which are skills of a linguistic kind, dependent on learning and neurological organization. It is clear, however, that the relation between these abilities is not essentially a causal one; disorders or defects in either ability are symptomatic of a deeper-lying retardation or disorganization. As Stewart (1968) declares, a study of the overall functioning of language processes is clearly needed if such relationships are to be understood (p. 127).

* See also 2.4 above

iv The Development of Auditory Discrimination

Very little is known about the development of children's speech-sound discrimination, whether normal or abnormal. The most interesting study to date on this aspect of language development was carried out in the Soviet Union by Schvachkin (1958), and reported by Slobin (1966b, p. 381-2). Schvachkin prepared a list of minimal pairs which illustrated most of the distinctive features of Russian, and taught these words to children aged 11 months and older. Then he tested them for recognition of differences between the words, and found a development in the recognition of contrasts, or ~~the~~ the distinctiveness of the features, similar, but not identical to that proposed by Jakobson (1949, 1968). Between 11 months and 1; 11, after the first contrast Vowel v. Consonant (or rather Consonant v. Lack of Consonant, in the pair "ok"-"bok"), consonantal contrasts emerged in the following order:

'Sonorant' v. 'Obstruant' - /m/v./b/; /r/v./d/; /n/v./g/ etc.

Palatalized consonant v. Non-palatalized consonant

Nasal v. 'Liquid' - /m/v./l/; /n/v./r/; /n/ v./j/; /m/v./r/.

Intranasal distinction - /m/v./n/.

Intralingual distinction - /l/v./r/.

Fricative v. Non-fricative - /z/v./m/; /ʒ/v./n/; /kh/v./l/

Labial v. Non-labial - /b/v./d/; /v/v./z/; /f/v./kh/ etc.

Stop v. Fricative - /b/v./v/; /d/v./z/; /k/v./kh/ etc.

'Lingual' v. Velar - /d/v./g/; /s/v./kh/; /ʃ/v./kh/

Voiced v. Voiceless - /b/v./p/; /g/v./k/; /z/v./s/ etc.

Blade v. Grooved Sibilant - /s/ v./ʃ/; /z/ v. /ʒ/

Liquid v. 'Glide' - /r/v./j/; /l/v./j/

It is interesting to compare this order of emergence of contrasts with Miller and Nicely's (1955) study of the relative audibility of some English consonants to adult speakers. They found that voicing and nasality were both very audible through masking noise, much more so than features of affrication or 'duration' (the feature that characterizes /s,ʃ,z,ʒ/)(p. 349). Yet in Schvachkin's list, nasality contrasts emerge very early, voicing contrasts relatively late. This is paralleled in the area of production by Ervin-Tripp's (1966) finding that voiced-voiceless contrasts are reported to appear relatively late in children's speech(p. 68). Miller and Nicely also find that features of place of articulation are less easily perceived than those of manner of articulation, which is reflected in Schvachkin's list, where the Nasal v. Liquid contrast precedes the Intranasal contrast, and the Fricative v. Non-fricative contrast precedes the Labial v. Non-labial contrast. Another slightly surprising result is the relatively early appearance of the Intraliquid contrast /r/ v. /l/ in the children's discrimination. This is a contrast that Jakobson (1949) claims is one of the latest to emerge in children's speech (p. 321). In the present study the contrast /l/ v. /r/ is relatively well observed - though these children are of course a good deal older than Schvachkin's subjects. The persisting confusion of /r/ and /w/ here and in Jones' (1967) work may correspond to the late emergence of the contrast Liquid v. 'Glide' (presumably equals 'semivowel') in Schvachkin's list. This is obviously a field where more research among younger children,

possibly along the lines laid down by Schwachkin, is desirable.

6. The Effect of Social Attitude on Language in Children

6.1 The Growth of Social Life

After the child's phonemic and articulatory behaviour has reached a mature standard - somewhere between 5 and 7 years - few innovations take place on the phonological level, though there may be development in stylistic features (Lenneberg 1967, p. 280) and possibly in prosodic and paralinguistic features. The main changes or innovations after this point, however, are products of differentiation of the functions of language, to explain which it may be helpful to consider briefly some of the more important mental and behavioural changes that take place around the seventh year of life.

Starting at this age, the child begins to develop an awareness of his own identity, separate from that of his parents. The main agent in the growth of this awareness is the group of the child's contemporaries (Lewis 1963, p. 167-8; Campbell 1964, p. 306 foll.). It is through identifying with the group that he is able to realize his separateness from other individuals in his family circle, just as at a slightly earlier age it was because of his identification with his family that he first became aware of the 'otherness' of his peers (Piaget 1926, p. 244). Because his personality is not strong enough at this age for him to act as an individual, the urge to conform with the group is a powerful agent on his behaviour, and this conformity tends to grow rather

than diminish up to a certain age (Campbell 1964, p. 300). The growth of self-awareness is closely linked to the growth of social awareness. Lewis (1963) traces the progression in children's patterns of play from solitary play, through 'parallel play', side by side, though not in co-operation, with another child, to group play and full co-operation with other children (p. 103-5).

Piaget remarks:

"There is... no real social life between children of less than seven or eight years." (p. 40)

Below this age, M.E. Smith (1926) observed that very little of young children's speech can be classified as conversation proper (p. 21); where speech is directed at others - children or adults - it is primarily to ask questions, obtain information or verification, or to criticize (Piaget, p. 10; Métraux 1950, pp 43, 45, 47 etc.) A large proportion of their speech is 'egocentric': the child talks for his own satisfaction, stimulated perhaps by the presence of an audience, but taking little account of who the audience is, and without caring much whether his utterances are listened to or understood. It is not until 7 or 8 years that the child begins to attempt to communicate with those around him:

"Now it is in our opinion just at this age that egocentric talk begins to lose some of its importance, and it is at this age... that we shall place the higher stages of conversation properly so-called as it takes place between children. It is also at this age that children begin to understand each other in spoken explanations, as opposed to explanations in which gestures play as important^{apart} as word." (Piaget 1926, p. 41-2)

Vigotsky (1962) has objected that egocentric speech does not in fact lose its importance, but that, disappearing from uttered speech, it is internalized; that part of language which the child used as an aid to planning actions and coming to terms with the child's own experience now becomes inner speech. (p. 17-19). The child may appear to become suddenly much more socially-minded, but the change is in reality more gradual. What is happening is that language itself - spoken language, that is - is becoming more of a social instrument.

6.2 The Formation of a Peer-Group Language

i The child, then, becomes a member of two worlds, that of his parents and that of his peers (Campbell 1964, p. 289 foll.), The influence of the group is very strong in all aspects of behaviour, more so than that of parents or teachers (Campbell, p. 313-5), and it is confidently to be expected that this influence should extend to language-patterns. Penfield and Roberts (1959) put the age of the maximum capacity for imitation and language learning between 4 and 8 years (p. 243). To this capacity is now added a strong motive for imitation - the desire to conform with the group, to find the security that comes from conformity (Lewis 1963, p. 167). The average child is "group-minded, expansive and receptive" at 8 years (Gesell and Ilg, in Penfield and Roberts, p. 244), and is practically certain, given a normal environment, to adopt some of the patterns of speech of the peer-group, even at the expense of patterns learnt from his parents. This tendency is perhaps even stronger among working-class children, since working-class attitudes emphasize the feeling of

community (Bernstein 1963 *passim*; Young and Willmott 1957 *passim*). Descoedres (1930) gives a pertinent illustration of this difference between working-class and middle-class children: in the course of discussing what they thought of war:

"Les enfants de milieux populaires disent toujours: 'parce qu'ils peuvent nous tuer', tandis que je trouve cinq fois des garçons aisés qui disent: 'parce qu'ils me tueraient'; 'j'ai e pas me tirer'. Le compte est cette réponse (6 ans): 'parce qu'on pourrait me tuer, et maman et papa, et je serais tout seul'. Deux autres, une fille (7) et un garçon (3) disent: 'j'ai peur', 'j'aurais peur'. Et trois fillettes disent: 'on brûlerait notre maison, on devrait sortir de la maison parce que la maison qui brûle' - tandis que tous les enfants de milieux populaires disent, 'ce serait tout détruit, les maisons'; 'les Boches brûleraient les maisons'. . . . En face de constatations de ce genre, on entend retentir à nouveau le 'Malheur à vous, riches!' de l'Évangile." (p. 85-6).

ii Restricted Code Expression

Bernstein (1963) notes that groups of children are among the types of social structure that form closed communities, maximizing identification of members with each other at the expense of individuated differences - similar to groups of criminals, servicemen, teenage gangs and working-class communities in Britain (Paper 5, p. 291). Such groups create a 'restricted code' type of communication. In Bernstein's theory, the restricted code is contrasted with the 'elaborated' code, which has a much wider reference than the homogeneous group. Restricted codes are an expression of group solidarity rather than of individual identity; they are a form of

social interaction, with the goal of establishing community between speaker and listener, rather than a means of conveying information or formulating opinion; they are associated with 'concrete' rather than 'formal' mental operations, in Piaget's terms. The restricted code, in comparison with the elaborated code, tends to use simpler syntactic structures, to be less concerned with processes than with objects, and to minimize causal connections. Emotion is usually expressed in terms of tone, volume, voice quality and gesture, where the elaborated code expresses it through more verbal channels. All children learn to use restricted code language, but while middle-class children also learn the use of elaborated code quite easily from their parents, working-class children hear almost exclusively restricted code language from their parents, and tend therefore to use only this type of expression. The restricted code lends itself to condensed and abbreviated styles of expression, and gives rise to slang, jargon and esoteric vocabulary and phraseology. The work of P. and I. Opie (1959) gives abundant illustration of this facet of child language. It is interesting to see that a great many of the rhymes and sayings of children's lore are not original, but derive from adult songs or expressions, from the past and from contemporary popular entertainment. The secret language of children is also composed of words whose use is forbidden to children - or thought to be forbidden - in adult society. Their function is to reinforce the children's feelings of solidarity in opposition to adults. At the

same time they exemplify the child's desire to copy adult models. Bernstein points to the conservative nature of group-language (Paper IV, p. 317), and this is also well illustrated by the rhymes recorded by the Opies, some of which have a history of centuries of occurrence.

iii Phonology in Peer-Group Language

As far as phonology is concerned, the influence of group-language on a child's individual phonological characteristicsⁱ is probably greatest in the period when these influences are first felt, from 7 years, but before the age at which the child's brain becomes less adaptable to new linguistic patterns, and established patterns stabilize, at 10 or 11 years. Grewel (1950) notes the strong dialectal character of children's speech at 10 years (p. 200). Children whose parents' phonology differs from the local speech quickly take on the local characteristics. In the children of Fordway School, it was noticeable that West Indian children of 5 or 6 years differed quite markedly in their speech from locally-born English children. At 7 or 8 years, however, there were only slight differences in vowels, intonation and voice quality, and at 9 or 10, as far as observation could establish, there was very little difference between their speech and local speech, except perhaps in some aspects of voice quality. The speech of Indian and Pakistani children appeared to be more resistant to change, though this may be a reflection in part of different structures in the Indian and Pakistani family groups.

Within the peer-group, the sexes may also be differentiated in phonological terms. Boys' speech is probably more vigorous or 'dialectal' in Western societies than girls. Ervin-Tripp(1966) gives details of a study by Fischer (1958) of the different contexts in which the verb endings /in/ and /in/ were used by children. It emerged that the more informal the context, the greater the frequency with which /in/ was used, and that boys used /in/ more frequently than girls (p. 89). Where there are characteristic features of girls' speech it is probable that they are adopted by girls with some unanimity. Girls tend to be more imitative than boys, so that one would expect to find a common style of speech among them even more than among boys. In the present study many of the older girls are found to use characteristic allophones, and particularly striking in the 8 and 9 year old girls is the existence of a common voice quality, that is predominantly non-nasal or 'adenoidal', has a characteristically low pitch and gives the impression of acoustic 'dullness'. This is accompanied by prolongation of utterance-final syllables (see III, 1.3 for a fuller account). The adenoidal quality of these girls' speech may not be attributable in every case to infection of the adenoids. Abercrombie(1967) observes that in slum areas in big cities, dampness gives rise to adenoidal complaints so commonly that they are practically endemic, and adenoidal voice quality is imitated from those who have the complaints even by those who do not suffer from them, so that this quality of voice becomes a characteristic of local speech (p. 94).

7.1 Studies of London Speech

1 Continuity of Forms

Early references to the forms of Popular London or 'Cockney' speech have demonstrated the long tradition behind many of the features of speech spoken in London today. Walker (1791), for example, in the preface to his Dictionary, mentioned the omission of initial /h/ and the habit of adding excrescent s/h/s in forms such as "honest" (p. xiii), as vulgarisms to be avoided by Londoners wishing to speak elegantly. Admittedly, he also mentioned a characteristic that has since died out, the substitution of /w/ for /v/. Pegge (1803) was probably the first to perceive that what was widely ridiculed as vulgarity in London speech could be shown to have as good a pedigree as forms of polite speech. Forms such as 'yourn' for "yours", 'hern' for "hers", 'hissself' instead of "himself" were shown to have an ancestry that could be traced back to Old English (p. 5). His was not, however, a trend-setting work, and it was not until 1938 that a historical account of Cockney was undertaken. Matthews traced the past history of the dialect on the basis of evidence from literature and works of logopaedics over several centuries, and also gave a brief and somewhat unsystematic description of 'present d y' (1938) Cockney, based on his own observation of speech in Hoxton in North central London. He outlined only what he considered to be the main features of Cockney as compared with Standard English. The achievement of this work is not its description of Cockney, but in establishing a long tradition of continuity in lower-class London speech, features of which - such

as the alternation of /in/ and /ɪn/ in participle and verb endings, or the alternation of /h/ and zero - can be traced back several centuries. Given that restricted code languages are conservative in nature in comparison with elaborated code varieties, then it should follow that lower class speech should be more resistant to change than standard, educated forms of speech which attach less importance to conformity and community - even though they might stress 'correctness'. The evidence of these early works demonstrates the resistance to change of Cockney.

ii Studies of Present-day Adult Cockney

Two relatively recent studies have given phonological accounts of Cockney, from slightly different theoretical standpoints. Sivertsen (1960) applied to Cockney a structural analysis of the type outlined by Hockett (1955, 1958). Her subjects were from the Bethnal Green area; for intensive study she used the speech of old ladies (p. 5). She formulates one of the problems facing anyone who sets out to describe a speech-form using a limited number of informants: this is the problem of accounting for the great amount of individual variation encountered in the speech of any one person or group of people - their 'parole', in de Saussure's terms, as opposed to the 'langue' that the investigator is attempting to define. In the samples of speech obtained from her informants she can, she says, "vaguely perceive the outlines of several styles of speech, though one can by no means define them." (p. 4) Variations in speech, on

both the segmental and the prosodic level, may be caused by factors such as the speaking situation, the nature of the interlocutor, the subject of conversation (p. 3-4). Sivertsen expected large-scale 'interference' from RP on her subjects, and to counteract the effects of this she attempted to abstract a 'hypothetical speech form' (p.4) from the speech used by her informants when they were least guarded and least conscious of how they were talking. Recognition of the relationship between RP and Cockney is implicit throughout her study; she makes constant reference to RP (as defined by Daniel Jones) as a standard by which to describe the phonemes of Cockney.

Hurford's (1967) thesis is based on the speech of the seven members of one family, also in Bethnal Green. The two grandparents had been born in nearby Stepney, their three children and two grandchildren were native to the district. Hurford's approach is 'diaphonemic', being essentially a study of the pronunciation of words, and of how a phoneme may have differing realizations in different words. This approach produces an analysis that differs from that of Sivertsen in some ways. Hurford would regard the vocoids in "board" and "bored" as variants of the same diaphoneme, or word-sound unit, Au (p. 420-3). To Sivertsen, however, the two vocoids are allophones of two phonemes that have distinctive distributions and distinctive phonemic norms - /oh/ in "bored" and /ow/ in "board" (p. 71-8). On the other hand, to Hurford the glide in "school" and "b ill" is a realization in the first case of the sequence Ue + L (p. 463-4) and in the second of u + L (p. 423). Sivertsen would assign the two glides to the one phoneme /ow/ (p.74-7).

Sivertsen's is essentially a study of phonemic norms, whereas Hurford's is a study of diaphonemic variants. Though Hurford refers to the RP phonological system, this is not used as a standard for comparison. The speech of his informants is compared with that of the other members of the family, and a synchronic account is given for the total speech of the whole family. He claims to find:

"a high degree of idiosyncratic variation both in and between individuals such as has not been hitherto described with reference to any dialect" (p. 2)

He also establishes that some aspects of London speech as exemplified in this family are subject to diachronic change, though this accounts for less variation.

111 Formal and Informal Elements in Cockney

Ideas of 'poshness' or correctness apparently loom large in the minds of some Londoners when they discuss their native idiom, as is apparent in remarks made by both Sivertsen and Hurford. It is perhaps inevitable then that they should be led to look for a relationship between what is considered the 'posh' form of English - Standard English, or RP, and the native dialect. Both Sivertsen (p. 3) and Hurford (p. 45-6) believe that 'dialectal interference' takes place when a Cockney endeavours to talk more correctly, or in a more standard type of English. One of Hurford's informants articulated initial /h/ frequently and correctly (without over-generalization) during her first tape-recorded interview, when she seemed anxious to impress the interviewer, but reduced the habit in later interviews (p. 324). This he would

interpret as fluctuation between an 'East London' and an 'RP' pronunciation (p. 46). However, though /'hæri:j/ "Harry" is obviously more RP-like than /'æri:j/, it would be a mistake to classify the first as an RP pronunciation and the second Cockney. Both presence and absence of /h/ are aspects of the one dialect: at a very early stage the children in this study learn to use initial /h/ in a systematic way, presence of the phoneme being associated with emphatic utterance in some words, and with a generally 'formal' context, while zero /h/ is a feature of a more conversational style of speech. 'Formal' here is taken to refer not only to a social situation, such as in school, or an interview with a non-parental adult, but also to the subject of a conversation, which becomes more formal when academic subjects are to be discussed, or a story is to be told. For children, a relatively simple scale of formality operates; for adults the question of the relation of language to its situation is more complex. Hurford and Sivertsen recognize a scale of formality operating on intervocalic /t/, such that ['bet̚ə] "better" is 'broad' or 'pure' Cockney, and ['bet̚^hə] , with heavily affricated /t/, is thought to be more correct. Sivertsen adds a third item, which is the exponent of 'normal' but rapid speech - ['bet̚^hə] , with a medial voiced alveolar flap (p. 119). Here it is clear that although the formal exponent in this paradigm is nearer to the Standard English realization of "better" than the version with the glottal stop, yet it is not the same as a standard English

pronunciation, differing primarily in the degree of affrication; it merely displays more features of RP than the other two versions. The influence of more standard types of English is felt in the items that the Cockney selects for more formal speech, but does not affect the nature of the items themselves. In effect, the Cockney speaker who does try to 'talk posh' is in the position of someone attempting to reproduce another language; he does so by adapting those elements of his own language repertoire that are nearest to the target sound, but unless he takes great pains to acquire the accent, or starts to learn when very young, his speech will always display features of his native pronunciation. Standard English is not, of course, a foreign language for Cockneys, and for most speakers there is an almost exact one-to-one correspondence between phonemic items. If it should happen, however, that a Cockney child were to fail to master some feature such as final /₃/, or the /f/ - /θ/ contrast, before adulthood, then it is likely that he would have great difficulty in making the transition to standard usage of these items in formal contexts. A Cockney trying to speak Standard English is less likely to give an accurate imitation of a Standard English speaker than to produce the Cockney's impression of 'talking posh', which sounds like nothing but a other Cockney giving the same impression. This thesis takes the point of view that what Hurford calls 'RP pronunciation' involves merely suppressing those elements of Cockney remote from RP, and promoting those that are near it. Fluctuations within an informant's pronunciation are taken to be

instances of either free or systematic variation, producing allophones that have a unitary relationship to the items in the phonemic system.

iv Children's Speech in London

Jones (1967) bases his study on the speech of 3 and 4-year old children from the London area, though only one of his subjects is Cockney, in the sense of having parents whose speech is strongly dialectal (p.51). He establishes a 'target language' for the children, a 'General London' dialect abstracted from a continuum of speech-forms in the London area, ranging from Cockney through Popular London and Modified (educated) London to RP (p.52-4). Though it was necessary for Jones to be able to refer to some generalized adult-type target for his subjects, it must be stressed that such a dialect is very much an artificiality, and even more hypothetical than 'pure Cockney'. As Gimson (1962) points out, there are within the London area numerous varieties of speech, popular dialects, dialects modified in the direction of Standard English, and modified at the edges of the London area in the direction of neighbouring dialects (p.84). This variation is essentially geographical, not individual, and it is not to be expected that a Popular London speaker will range from Cockney forms in his most conversational style to RP in his most formal or 'frozen' style (Joos, 1962,p.13): nor will an RP speaker lapse into Cockney, even when he is trying to be informal among Cockney speakers - not that Jones has suggested anything like this.

It is, however, the writer's opinion that while Standard English is bound to have some effect on attitudes to language among speakers of lower-class dialects, yet it has not basically affected the homogeneity of the dialects. Certain assumptions underlie the approach to the dialect of Cockney in this thesis. They may be presented briefly here: Cockney or Popular London dialects are sharply distinguished from RP or Standard English dialects, even though there is a considerable area of overlap between the two types of dialect: there is a high degree of similarity among the Popular London dialects: these dialects occur in their least 'modified' form among children, mainly among working-class children: Modified London speech results from individual modification of speech in the direction of Standard English, and that such modification takes place, whether consciously or unconsciously, after the acquisition of peer-group language - not till the mid-teens, say - and on the basis of the peer-group language: there are very few areas of London where children grow up to acquire, through the natural processes of language learning, a 'modified London' pronunciation - that is, a form of speech between Popular London and RP, with elements of both dialects. It is possible that such a development may take place in areas in central London, where enforced integration of lower and middle-class children is resulting from the movement of professional families into districts such as Camden and Islington, but such areas are at the present time exceptional. In their pre-teen years

children are strongly dialectal in their speech. If they are brought up in a predominantly working-class area it is to be expected that they will learn the features of the local dialect. If they are in a predominantly middle-class area or at a boarding-school of a certain type, they would be expected to acquire a Standard English accent, possibly of the type described by Gimson as Advanced RP (1962, p. 85).

v Code-switching

Only when a speaker has spent his childhood in an area conducive to the learning of a Popular London type of speech and has then for some reason or another altered his speech - consciously or unconsciously - in the direction of Standard English, only in such a case is it expected that 'dialectal interference' will be observed, as the speaker alternates between the two dialects in varying situations. This is one type of adjustment to the two types of speech in the London area. Another type produces something very like bilingualism, when a speaker learns to use two sharply differentiated dialects, one Cockney or near-Cockney, and the other Standard English. The one is used in the home and among friends, and the other in relatively formal situations, or even in formal situations among RP speakers. It is probably relatively easy to acquire this second dialect if the speaker has sufficient motivation, since models of RP speech are readily available on the wireless, television and films, and the young child is exposed to these influences from the very start of his language learning period.

Such speakers can switch from the one dialect to the other, and are probably conscious that they are doing so. This is a facility which is probably increasing as sound media become more and more important a part of family and school backgrounds - a facility denied to older generations of Londoners. Again, however, it is stressed that it is unlikely to affect the native speech or children's dialectal speech in any areas in terms of phonology. Alternation of this kind will not be encountered among children of Primary School age; modification of a speaker's idiolect is not predicted to occur at so early an age for the normal working-class child. There is no motivation in the child to transform his discriminatory comprehension of Standard English into production. When such motivation arises the more 'imitative' children - girls in particular - will probably be the more successful in the acquisition of the second dialect.

vi East London Speech

The separation of RP and Cockney speech is reinforced in districts of East London by the comparative isolation of these districts from other parts of the city where Standard forms of English are more likely to be heard. Unlike an area such as Islington, where first immigrant and then professional families have moved into what was once a predominantly working-class area, and where locally-born children are likely to mix at school with children from families where Standard and different forms of non-standard English are spoken, Bethnal Green, Bow and similar localities in the traditional 'East End' are free of Standard English speakers.

Few middle-class professional families live in these districts, and little Standard English will be encountered in conversation. Forms of speech heard on radio and television are no more likely to modify the speech of the adult East Ender in the direction of RP than American films are to turn them in the direction of, American usage. What influence is felt from these sources is likely to be in vocabulary and phraseology rather than phonology. Nor do the residents of this part of London come into contact with Standard English speakers in other parts of London - except through a work-situation. Hurford stresses that the members of the family he was studying tended not to move outside the district (p. 13). The old ladies in Sivertsen's work were similarly life-long members of the Bethnal Green community, and travelled very little (p. 7). Young and Willmott emphasize the homogeneous nature of East London working-class communities in their study (1957) of Bethnal Green: married daughters rarely wish to move far away from their mother, and the family group is typically large and cohesive. Many of the children interviewed in the ^{present} study spent some time in the care of their grandparents, usually their 'N n', while their parents were at work or out shopping. It was apparent that the grandparents played a large part in the child's life; this will be yet another factor in the maintaining of traditional Cockney form in present-day London speech. Even if the child were to hear Standard English spoken by teachers at school - which is not the case at Fordway School - this is not likely to modify their speech. As Campbell (1964) shows, the influence of the child's peer-group is much stronger than that of teachers or even parents

(p. 313-5)

7.2 Phonological Descriptions of Cockney

It is emphasized that the type of speech described in the main body of this work is the speech found in a specific locality: it is not the task of this thesis to make general statements about London speech. There are, however, certain features that most forms of Popular London speech have in common, and the remaining paragraphs of this chapter are devoted to a review of the most significant of these features as described by Sivertsen (1960), Hurford (1967, 1968), Jones (1967) and Matthews (1938). The main interest is in the findings of the first of these two works, both of which are based on the speech of individuals in Bethnal Green. In geographical terms Bethnal Green and Bow are very near. Before the last war the writer's mother was living in Bow and his father in Bethnal Green, but did not consider themselves distant from each other. They lived, in fact, in turnings off the same road, Roman Road, which runs from Bethnal Green station almost to Old Ford in Bow. Women from Bethnal Green visit Roman Road market, near Fordway School, on days when Bethnal Green market is closed.

¹ i Vowels

There is some disagreement as to the number of vowels in Cockney. Sivertsen, followed by Jones, gives six 'simple' vowels. /a/ is expressed as stressed /ə/ - [a] or [ä] - as opposed to unstressed /ə/ - [ə] (p. 33 foll.). Hurford agrees with the present study in assigning seven simple or short vowels - /i, e, æ, a, ɐ, o, u/. As to long or complex vowels Hurford gives 13

Jones 13, Sivertsen 14 and the present study 13, with the proviso that a fourteenth vowel - the sound in "tour", "during" - may exist in Cockney. Hurford has the item Ua and Sivertsen /uh/ which correspond to this vowel, and both agree that it occurs only infrequently. Jones does not encounter the vowel in his material and omits it from his list of vowel items. In the material on which this study is based only one word which might contain the vowel occurs - "Euro e" - but it takes the phonetic form [ˈjəvə], which is expressed phonemically /'jərep/. The possibility of the existence of the sound must be acknowledged on the basis of potential oppositions such as "queue"- "cure". It is, however, extremely rare, and probably rarer in Cockney than in RP, where it is the least frequently occurring vowel (Fry (1947) found the RP vowel /və/ to have a frequency of occurrence of 0.06% - Gimson 1962, p. 143). Jones and Sivertsen propose a phoneme /ow/ - the vowel in "all", "sauce", "full", "Paul". Hurford treats this sound as a variant of different diaphonemes in different words: thus, Ue + L in "school"; Au + L in "fall"; Oo + L in "pull". Where this account disagrees with all other studies is in the establishing of a phoneme /aw/, which is treated by Sivertsen, Hurford and Jones as a sequence of /əw/ + /l/ or /o/ + /l/. Table 1 compares the typography and total items of these accounts of the Cockney vowel system, with a warning that the correspondances between the items are not exact.

TABLE 1 - THE VOWEL SYSTEM OF COCKNEY IN FOUR STUDIES

Phonetic Item	Sivertsen	Jones	Hurford	Beaken
[ɪ]	i	i	<u>I</u>	i
[e]	e	e	<u>E</u>	e
[æ]	a	a	<u>A</u>	æ
[ä]	ə (stressed)	ə (stressed)	<u>U</u>	a
[ə]	ə (unstressed)	ə (unstressed)	<u>ə</u>	ə
[ɔ]	o	o	<u>O</u>	o
[ʊ]	u	u	<u>Oo</u>	u
[eɪ]	ij	ij	<u>Ee</u>	ij
[æɪ]	ej	ej	<u>Av</u>	æj
[aɪ]	aj	aj	<u>Ie</u>	aj
[ɔɪ]	oj	oj	<u>Oi</u>	oj
[ɛʔ]	əw	əw	<u>Oe</u>	əw
[Aɪ]	-	-	-	aw
[oɔ]	ow	ow	-	ow
[eʊ]	uw	uw	<u>Ue</u>	uw
[iə]	ih	ir	<u>Ia</u>	i:
[eə]	eh	er	<u>Ea</u>	e:
[æɪ]	aw	aw	<u>Ou</u>	æ:
[əɪ]	əh	ər	<u>Ur</u>	ə:
[aɪ]	ah	ar	<u>Ar</u>	a:
[ɔə]	oh	or	<u>Au</u>	o:
[ʔ]	uh	-	<u>Ua</u>	(u:)
Total of Vowel Items	20	19	20	21(22)

It will be seen that the main area of disagreement among the studies is in the glides to a back close or half-close position, corresponding in orthography to word-final /l/ after a vowel. Hurford treats these glides strictly as sequences of Vowel + l. Jones and Sivertsen regard the vowel in "all", "short", as a different phoneme from that in "boring", "saw", "poured". Even though the two could be shown to be in complementary distribution through a rather complex system of morphophonemic rules, it is more convenient to recognize the existence of such contrasts as "sword"- "sawed" as evidence in support of the separate phonemic status of the two vowels. All three studies treat the glide in the words "old", "pole", as /əw/ + /l/, and that in "doll", "toll" as /o/ + /l/, though in fact the two glides are not contrasted; "doll" and "dole" are homophones in Cockney. The present study treats this glide as a phonemic unit (see III, 4.1).

ii Characteristics of Cockney Vowels

Alternation of Short Vowels

Alternation of short or simple vowels that are near in quality is noticed, particularly in what seem to be older forms of Cockney. Matthews (p. 169) and Sivertsen (p. 52-3) observe the occasional substitution of /i/ for /e/ in such forms as /git/ "get"; /ə'gin/ "again"; /'ivri/ "every". /e/ is quite commonly substituted for /æ/, as in /'keɪ/ "catch"; /'demp/ "damp" (Sivertsen, p. 59). The opening of /e/ to /æ/ seems to have been a feature of Cockney at one time (Matthews, p. 170) and may still survive in one form -

/'æərənd/ "errand". Hurford and Jones consider these features to be typical of modern Cockney, though /ə/-forms of certain words still survive, such as /'kɛtʃ/ "catch". Confusion between /a/ and /æ/ is noted by Jones, though this^{is} probably the result of phonological immaturity in his subjects (p. 93-4). Cockney /ɪ/ occurs in many weak syllables where Standard English would have /ə/. Sivert en records /'ædɪk/ "haddock"; /'gɑ:dɪn/ "garden" (p. 52). She also notes variation between /ɪ/ and /ɪj/ in final unstressed syllables as in /'æ:zɪjz/ "houses"; /'tʃə:tʃɪjz/ "churches" by the side of more standard forms, and variation between /ɪz/ and /ɪjz/ for "his", "is" (p. 50-1).

Monophthongal Variants

Monophthongal variants of what are quite frequently diphthongs in other forms of English have been noted in Cockney. Of the vowels /ɪ:/, /e:/, /o:/, as in "here", "there", "four", Hurford finds that monophthongs predominate over diphthongs in closed syllables, while in utterance-final syllables glides to [ə] occurred most frequently (pp. 420, 424, 436). We should expect similar behaviour from a phoneme /u:/ if it were found to be justified: thus a monophthongal realization in "during", a glide to centre in "cure", "endure".

In /æ:/, as in "town", monophthongs and diphthongs alternate freely in Cockney, although glides are not common in words containing the sound, in Standard English. Matthews finds a pure vowel that is almost completely open though somewhat retracted from

front - in the area of /a/ : thus [tʰə n] , [tʰə n] for "town" (p. 78). Sivertsen finds this vowel very variable, recording a monophthong like that described by Matthews and other monophthongs at points as close as [ɛ] , as well as diphthongs and triphthongs (p. 66-8). Hurford also finds variation in the ratio of diphthongs to pure vowels for this item in his informants' speech, ranging from 1:1.7 to 1:1 for different speakers, though there is no definite trend with age of speaker (p. 403-8).

A high proportion of monophthongs in /aɪ/ is noticed by all commentators; it makes possible rhymes such as "laugh"- "life" (Sivertsen, p. 70). The vowel may also be rounded in some utterances (Sivertsen, p. 64). Hurford also records rounded and unrounded allophones of /a:/ in the proportions of 2:3 (p. 415 - 420).

/æj/ and /əw/ may also have pure-vowel allophones, though less frequently than the other items mentioned. Sivertsen notices monophthongs for /æj/ before other vowels and before certain interludes or medial consonants within words, as in "playing", "sailor", "ain't I?" - /'æj nɑj/ (p. 57-8). Similar contexts may produce unglided allophones of /əw/, as in "going", "November" (Sivertsen, p. 93) and particularly in the word "no", often heard as ['na:] . Hurford also records forms [dʒ ɛ 'ɛ d w ə d z] "Joe Edwards" and [ɡ ɛ ɪ n] "going" (p. 464).

Diphthong 1 Variants

Other items that are pure vowels in Standard English may be glided in London speech. The gliding of /ij/ as in "me", /uw/ as in "you", is observed by all four studies under discussion.

Perhaps the most characteristic feature of Cockney vowels is the occurrence of two-directional glides or tri hthongs in certain vowels, most particularly /i:/, /e:/, /o:/, though they have been recorded also in /oj/ (Jones, p. 96), /æ:/ (Sivertsen, p. 67). They occur predominantly in utterance-final syllables. Sivertsen describes triphthongs in /æ:/ as moving from front half-open to first a more open and then to a central position. In this study, however, are found only triphthongs moving first to close front and then to centre - [ɛjə] or [ɛjɜ], where Sivertsen gives [ɛäə], [ɛǎə].

Sivertsen also comments on the extraordinary length of stressed syllables in the speech of some Cockneys, particularly women. This may produce a disyllabic effect with certain vowel glides, as [a:ɪ] for /aj/, [ɛ:ə] for /æ:/ (p. 40-2).

Final /l/

Vocalic realizations of final /l/ are well documented in studies of the dialect. These produce not only the phonemes /ow/ and /aw/, but also the vocalic glides [ɪw], [ɛɪ], [ɛə], [aɪ], realizations of the sequences /il/, /el/, /æl/, /a:l/, and two-directional glides [ɛɪo], [aɪo], [ɔɪo], realizations of /æjl/, /ajl/ and /ojl/. There is also the possibility of glides in /ə:l/ and /al/; though these are not found in the present study they are referred to by Hurford and Sivertsen. Jones (p. 80), and Sivertsen (p. 39 - 40), note the reduction of some vowel contrasts before /l/ (see III, 4.3 iv, vii, xi, xix, xxii, xvi, xxv below).

1.1.1 Consonant Items

There is general agreement on the number of consonants in Cockney, which is allowed to be the same as in Standard English or RP, as described for example by Gimson (1962). One difference in classification is Sivertsen's treatment of /tʃ/, /dʒ/ not as affricates but as consonant clusters (p. 94-5). There are, however, certain differences between some consonantal items in Cockney and Standard English, in distributional and allophonic features.

/h/

The alternation of zero and /h/ in initial position in certain words has long been taken to be typical of London speech (cf. Walker 1791, p. xlv). When /h/ is present it seems to be predominantly, though not exclusively, in formal contexts, and may alternate with the glottal plosive as an emphatic device (Sivertsen, p. 141). Adult speakers seem to have learnt the rules governing this alternation quite adequately, since over-generalization of initial /h/ to produce forms such as "honly", "hanyway", is not frequent in the records of Matthews and Sivertsen, and is not found at all by Hurford.

Over-generalization is however found quite commonly among younger children in this study, and less frequently among even the oldest, as in /'helɪfənt/ "Elephant"; /'hɪŋk/ "ink"; /'hɪŋtʃ/ "ingh". This may be a development in the acquisition of a rule governing the presence or absence of /h/ in particular items of vocabulary, resulting from parental influence, or from spontaneous generation of a rule on the part of the child.

/ɪn/ and /ɪŋ/

London speech is also characterized by alternation of the forms /ɪn/ and /ɪŋ/ in verb and participial endings, and in a few non-verb contexts such as /'ɪzlɪntən/ "Islington"; /'bækinəm/ "Buckingham" recorded by Sivertsen (p. 129). This feature is noted by all the studies under consideration.

/f/ and /θ/; /v/ and /ð/

Hurford suggests that the hypothetical form 'pure Cockney' would not have the phonemes /θ/, /ð/ (p. 131). It is certain that these phonemes have a lower frequency in London than in Standard speech. /θ/ in "thing", "thought", "teeth" is often substituted by /f/, and medial /ð/, in "mother", "father", by /v/. Matthews records an older habit of alternating inter-vocalic /ð/ with /d/ in certain specific words such as "farthing" - /'fɑ:dɪn/ or /'fɑ:dɪn/ (p. 80). This is not supported by any other study.

Initial /ð/ in mature speech is not so likely to alternate with any one particular phoneme: rather it displays a great variety in its allophones, which vary according to the phonetic context. Sivertsen notes that it may be realized by dentality in the realization of sequences such as /dð/, /tð/, /zð/, /nð/, /sð/ as single dentalized segments - [d̪], [t̪], [z̪], [n̪], [s̪] (p. 122). It could be suggested that the less distinctive and 'rarer' phonemes in a language, in Jakobson's sense that they are among the last to be acquired by the child, are also those which display the greatest

variety in their allophones, or are most frequently substituted. For /θ/ - or the diaphoneme Th - Hurford notes at least 19 phonemic and allophonic variants (p. 482). This study finds more variety in realizations of /ð/ than suggested by Sivertsen. One of the features of this pair of phonemes may be that in many positions they are distinctive by virtue of their difference from near-by phonemes as much as by virtue of their dentality - in other words, their distinctive feature is in many cases what they are not, rather than what they are. It is worth noting that /f/ and /v/ which are often substituted for /θ/ and /ð/, do not have anything like this amount of variety in their allophones - /f/ in "muffin", for example, contrasted with the medial consonant in "nothing". It could be argued that /θ/ and /ð/ are an essential part of the Cockney phonemic system, not the results of pressure from Standard English, but that they have different distinctive features, - one of which is the feature 'having many allophones', - from other forms of English.

Intrusive /r/

'Intrusive' and linking /r/ are well attested^t in these studies. It seems to be the case that the vowels which are succeeded by this segment are almost invariably of the class of vowels symbolized in this study by the length-marker / :/ - /i:/, /e:/, /æ:/, /o:/, /ɑ:/, /ə and the weak vowel /ə/. It may very rarely be found after /aj/, /u/ (Sivertsen, p. 138).

Glottal and Glottalized* Allophones

A further characteristic of London phonology is the prevalence of glottal allophones for a number of phonemes. Numerically and proportionally the most common occurrence of [ʔ] is as an allophone of /t/ medially and finally in the syllable. It may be word-initial or morpheme-initial, as in [ˈgʔɛɪʔbɛɪd] "go to bed"; [ˈsæɪtʔə] "say ta-ta"; [fɔː ˈʔɛɪn] "fourteen", but in this phonological account /t/ in these utterances would be regarded as syllable-final, thus /ˈgæɪtʔəː/; /fɔːtʔɛɪn/ - or medial - /ˈgæɪtʔəːbed/ (see III 3.1). It is also noted as an allophone of the fortis plosives /p/, /k/, as well as /d/, /g/, /f/, /v/, /θ/, in these studies of Cockney. Matthews gives it as his view that the extension of this allophone to phonemes other than /t/ is a relatively recent development, which has taken place within the latter half of the nineteenth and the first part of the twentieth century, though he emphasizes that the material on which his research is based does not provide reliable evidence (p. 179). Fortis plosives are almost invariably glottalized* in syllable-final position (for a full discussion of this see III, 3.1^m below). In addition to glottal and glottalized voiceless allophones, however, Hurford (1968) notices voiced glottalized continuant allophones

* From this point, and throughout this thesis, the term 'glottalized' is used, for convenience, in the sense of 'having glottal reinforcement', or 'pre-glottalized'. Contoids with simultaneous plosive articulation and glottal closure are described as 'ejective'.
caused by compression

of some fortis consonants. Medial /p/, /t/, /k/ may be realized as glottalized frictionless continuants or partly voiced, or voiceless but unaspirated, and glottalized plosives. The release of the oral and glottal closure may be simultaneous - [p̚], [t̚], [k̚] - or the oral release may follow the glottal release - [p̚], [t̚], [k̚]. In the case of continuants, glottal closure is simultaneous with the frictionless continuant articulation - [p̚], [t̚], [k̚]. Thus [p̚] "people" [t̚] "twenty" [k̚] "talking", [p̚] "top of" [b̚] "better". Fricatives may also have a voiced frictionless continuant allophone - /f/, for example, in [ɔ̚] "officer" (p. 391).

Final contoidal /l/

Sivertsen speaks of certain areas in the phonological system of Cockney where diachronic changes taking place in the dialect produce 'fuzziness' at the edges of phonological categories, causing difficulty for the investigator preparing a phonemic analysis (p. 177) One such area may be among those vocoid glides that are realizations of final /l/. The data supplied by Hurford on this feature lead us to suppose that there are changes taking place in the proportion of vocoid to contoid realizations of this item. He calculates the ratios of final vocoids, in the region of [v], to final velarized [ɫ] and final clear [l]. Presumably occurrences of clear [l], though word-final, are also inter-vocalic, and Hurford does not specify what proportion of vocoidal realizations occur before a vowel, and what proportion are utterance-final or before a consonant. Even so, there is a

marked increase in absolute and relative terms in the frequency of vocoidal final /l/, and a marked decrease in the occurrence of final contoidal, velarized /l/, from the oldest to youngest speaker, as can be seen in Table 2:

TABLE 2 (After Hurford) Realizations of Final /l/ In the Speech of Seven Members of a Family

Speaker	Age (1967)	[ɫ]	[l]	[v]
Ben	82	8	58	2
Nan	79	1	19	-
Phil	44	-	30	5
Stevie	43	-	29	8
Ada	38	1	68	16
Jenefer	18	-	8	5
Mark	14	-	22	24

(p.333)

These figures are perhaps not conclusive, perhaps, as a result of the small size of the sample. Final velarized [ɫ] may be a characteristic of certain styles of speech, and it is possible that the oldest speaker in Hurford's study was a frequent user of these styles. The figures related to final vocoidal realizations are more suggestive, and perhaps more reliable, as a relatively large sample.

It seems that vocoidal final /l/ is characteristic of children's speech at an early age. This has been noticed by Holmes (1927, pp.223,225), Albright and Albright (1956,p.389),Smith (1970,

p. 13-4). Levina (1940, reported by Robin 1966b, p. 372-3) records that Russian children replace sequences of Vowel + /l/ - clear [l] - by Vowel + /i/, and vice versa. In these instances the children have probably perceived the feature 'vocalic' in /l/, but not until a later stage have they perceived and used the feature 'consonantal' or 'lateral articulation'. Hutcheson (1968) draws a developmental paradigm for this phoneme for the children in Ingram's study, as follows:

"wheel"	i)	-	ii)	-o	iii)	-ol	iv)	-ɹ
							(p. 38)	

Now for these children, learning Scottish English, velarized [ɹ̥] is the adult norm, and there is probably little fluctuation between lateral and vocoid once adult articulation is attained. For Cockney children, however, the mature form of this item is less consistent, and there may be fluctuation at later stages of development. Jones (1967), for example, notices that some children go through a stage at the age of 4 years when words are produced with final clear [l], even though children at 3 or 3½ years are producing velarized [ɹ̥] (p. 101). He suggests that this is a 'spelling' pronunciation acquired from adults pronouncing words exaggeratedly and over-correctly with a final clear [l]. It undoubtedly also represents a stage before the child has completely established the phonological rules concerning the alternation of final vocoidal and lateral /l/. At an earlier stage, by contrast, the child may operate with a rule that inhibits the occurrence of lateral /l/ syllable-finally even within a word - producing forms

such as /'kowi/ "calling"; /'fowi/ "falling" (p.101).

/3/ This fricative has a limited distribution in Popular London speech both in absolute terms and relative to RP. It occurs medially, as in "television", "measure", but very rarely, if ever, in final position, where /dʒ/ is more common - /beɪdʒ/ "beige" /gæɪdʒ/ "garage" /ruːdʒ/ "rouge" (Sivertsen, p.124).

iv Sex Differences in Cockney Phonology

Both Matthews (p.77) and Sivertsen (pp.30-2,119) comment on differences between women's and men's speech, which consist in a tendency in men to clipped, vigorous delivery, which may be partly a result of a more general use of the glottal stop, and a tendency in women to 'drag out an accented syllable', producing a somewhat drawling effect. Girls in the present study are similarly found to lengthen both vocoids and contoids in utterance-final syllables. Hurford finds that /p/, /t/ and /k/ are glottalized more commonly by his male than by his female informants (p.475). He also notes that these plosives are aspirated more frequently by Ada and Jennifer, and that these two and the third female informant, Nan, use relatively more voiceless allophones of lenis consonant phonemes) than the other, male speakers (p.475). Throughout this study, a number of differences are found between girls' and boys' speech which can be related to these findings.

CHAPTER III → PHONOLOGY OF NINE-YEAR OLD CHILDREN

1.1 Maturity of 9-year old Speech

As has been seen in the previous chapter, children's phonology is considered by writers on the subject to be substantially mature by the age of 8 years (Templin 1957, Fry 1966, Lenneberg 1967), in terms of both phonemic structure and articulation. Slight differences are found between the 8-year olds and 9-year olds in the present study in the articulation of /r/ (see 5.6 ii), but in all other respects there appear to be no major differences in speech between the sixteen children whose phonological system is described in this chapter. The phonological norms established by this means are then taken to represent the terminal model for the development of the younger groups of children in the school, whose speech is considered in chapters IV and V.

1.2 Informants

The sixteen children composing this 'mature' group were drawn from two classes in the school - Classes 2 and 2X - though there is no significant difference in the age-range or the intellectual ability of children from the two classes. There are 8 boys and 8 girls. All were born in the neighbourhood of the school, and all have English parents. The names and ages of the children, with their position in their family, are as follows:

Russell Kilden ('Russell'). Aged 8,2. Attwin; no other sibling
Jennifer Carnegie ('Jenny'). Aged 8,5. 2nd of 3 children.
David Gilbert ('David Gl.'). Aged 8,6. 2nd of 2 children.
John McDonnell ('John'). 8,6. 1st of 3 children.
Philip Chandler ('Philip'). 8,10. 1st of 2.
Clifford North ('Clifford'). 8,10. 2nd of 3.
Diane Allen ('Diane'). 8,11. 2nd of 3.
Jeanette Leigh ('Jeanette'). 9,1. 1st of 2.
Jackie Newton ('Jackie'). 9,1. 2nd of 2.
David Griffen ('David Gr.'). 9,2. 1st of 2.
Kathleen Bye ('Kathleen'). 9,2. Only child.
Elaine Baker ('Elaine'). 9,2. 2nd of 3.
Ross Smith ('Ross'). 9,3. 2nd of 5.
Anthony Holtum ('Tony'). 9,9. 1st of 2.
Vivienne Ashmore ('Vivienne'). 9,10. 3rd of 4.
Teresa McCombie ('Teresa'). 9,10. 3rd of 4.

The average age of this group is 9,2, so that they can most conveniently be referred to, with admitted inaccuracy, as the 9-year old group of speakers.

In the discussion of norms of the mature model of language below, reference may also be made from time to time to the speech of younger children where such utterances illustrate features, considered to be characteristic of mature speech, but not exemplified in the recordings available from 9-year

children. In these cases the speaker's age will be given; thus, 'Tony § (8,1)'.

1.3 Non-structural Characteristics of 9-year old Speech

A description of the phonemic system and phonological characteristics of speech of this group of children forms the bulk of this chapter. In the course of its preparation - collecting, listening to and transcribing the recorded speech of the children - a very strong impression was gained by the writer of a unity of speech among these children. This may not emerge clearly in the phonological account below, which consists of a number of phonological statements followed each one by a number of exceptions; the exception proving sometimes more interesting than the rule. It may be worthwhile then to precede the discussion of phonological structure with a brief review of certain aspects of speech, not directly related to structure, but which contribute to this impression of the homogeneity of speech.

i Voice Quality

Several girls in this group - Vivienne, Elaine, Jackie, Kathleen and Diane - show a remarkable similarity in voice quality (cf. Catford 1964; Laver, 1968), the non-phonemic component of voicing which is relatively constant through vowels, continuants and voiced consonants. This is characterized by pharyngeal or glottal friction in the voicing, of a type associated with the voiced fricative [ʁ], by generally

low pitch, and by a relative absence of nasality or nasal resonance in vowels, in contexts, such as the neighbourhood of a nasal consonant, where nasality might be expected. The impressionistic label 'foggy' could be applied to this type of voice quality. In places, and particularly at the end of an utterance, this voice-quality is found in conjunction with a slow and decelerating tempo of utterance, in which vowels and continuant consonants are more than usually lengthened. With one speaker in particular - Elaine - this produces an impression that can only be described as slow-witted, and that is noticeable to a lesser extent in the other girls. It is probably, however, a misleading impression: Elaine's teacher commented that she "appears morose, but is far from stupid". Such similarities in voice-quality are less prevalent among the boys of the group.

11 Articulatory Setting

'Articulatory Setting' as described by Honikman (1964), is the disposition of the organs of speech in readiness for speech, in that position from which the articulations of a given language are most easily executed. Each language has an individual and distinctive articulatory setting which is an essential, though non-phonemic, part of a natural, native-sounding accent. The articulatory setting of Cockney seems to differ from that of Southern Standard English as described by Gimson (1962), especially in the attitude of the lips.

Lip-rounding is rarely extreme, except in the case of the semivowel /w/, in syllable-initial and medial positions, and in the last part of the glide /ow/, which is more often rounded than the other glides to back half-close or close, /əw/, /uw/ and /aw/. Quite often, indeed, /əw/ and to a lesser extent /uw/ may have unrounded realization. Similarly the fricatives /ʃ/, /ʒ/, and the affricates /tʃ/, /dʒ/, have relatively little lip-rounding. This laxness in lip-rounding appears to be characteristic of every speaker in the 9-year old group. It is to be understood in the transcriptions which follow that symbols for rounded vowels such as [ʊ, u, ɔ] involve little lip-rounding. Where rounding is more marked this is indicated, as in [ʌɔ̃], [ɔ̃:].

111 Dialectal Features

Syntactic and lexical features of the Cockney dialect are also shared by all the speakers in this group as far as the writer could judge, allowing for differences in style of speech according to the different topics of conversation in the recordings, or the degree of constraint felt by a speaker in the presence of a tape-recorder and adult recordist. Particularly noticeable was the use of question-tags at the end of what were otherwise statements - expressions such as /'dɪtənɪj/ "didn't he?"; /əɪnɪt/ "ain't it?"; /'wɒnɪt/ "wasn't it?". Such appeals for affirmation might also be

expressed after a statement by /æj/ "eh?", with a high-fall intonation. An utterance then becomes a suggestion, as in "We can listen to it now, eh?"

Another lexical feature is the adverbial /a:f/ "half" or /nɑ:f/ "nalf" or "not half", used predominantly to qualify adjectives or participles, as in:

/itwəz'nɑ:f'gud+/ "It was nalf good" (Clifford)

/ɪjz'nɑ:f'tow+/ "He's nalf tall" (Elaine)

/itwəz'a:fə'najs,wan+/ "It was half a nice one" (John)

/ɑjwəz'a:f'fraɪtənd+/ "I was half frightened" (Steven 5,5)

It will be seen that "half" and "nalf" are equivalent forms. It is not suggested that such lexical or syntactic items are unique to the speech of Old Ford, but rather that the children of Fordway School show a high degree of homogeneity in their usage.

2.1 Prosodic Features - Intonation, Stress, Rhythm

- 1 To give an adequate account of stress, rhythm and intonation patterns in the type of speech under consideration in this thesis would require much more space and, more importantly, more informants in a greater variety of controlled situations than the present study can hope to provide. No attempt is made here to classify intonation, in the sense of variations in pitch during the utterance. Rhythm is discussed in chapter IV, only in so far as it affects vowel

be found in unstressed syllables that have the same value as they would in stressed, and are therefore neither weak nor weakened (see 4.2 below). This phenomenon is usually observed in the unstressed syllable immediately following a stressed one, and particularly in utterance-final position:

Jenny:	[ˈlæpɪənd]	/ˈlæpplænd+/ "Lapland."
Teresa:	[ˈpædʒəd]	/ˈpædud+/ "...paddled."
David G:	[ˈkæɪbəz]	/ˈkæɪbəz/ "Cowboys..."
Vivienne:	[ˈʒəʊeɪ]	/...ˈʒəʊeɪ+/ "(What colour's) your hair?"
Tony:	[ɪzˈdægkæɪm]	/ɪzˈdægkæɪm/ "His Dad came..."

3.1 Juncture

- i Consonantal phonemes have characteristic allophones according to their position within a syllable, and according to the position of the syllable in an utterance. The same is true of consonant clusters and, in part, of vowels. These characteristics are conveniently classified by means of feature of juncture.

ii Types of Juncture

Four main types of juncture are postulated in this discussion of Cockney:

- a) External Juncture, symbolized /+/, represents the transition from silence to the onset of speech at the beginning of an utterance, and from speech to silence at the end of an utterance:

Diane: [tʰəkʰɪˈjaːp̥] /təkɪˈrap+/ "to clear up."

David Gl: [hɪˈzæʔˈɡʊd] /+hɪˈzækˈɡʊd+/ "Is that good?"

b) Internal or Open Juncture, symbolized /-/, occurs between words and syllables within an utterance, and marks a division between two phonemes such that the phoneme preceding /-/ is syllable-final, and the phoneme following it is syllable-initial. /-/ generally corresponds to a word-boundary, especially in more careful speech, but this is not invariably the case, as will be shown below(3.3):

Kathleen: [ˌkɪˈlɑːsˈtʰeɪ] /ˌklɑːs-ˈtuw+/ "Class 2"

Vivienne: [ˈtʰɛn-ˈɛɡɡɛtˈhæːs] /ˈten-ˈegget- hæːs/
"Ten, Edgate House"

Vivienne: [tʰwəˈɹaŋˌkʰoo] /tʰwəˈraŋ-kow/ "to her uncle"

c) Close Juncture. In connected speech phonemes within a syllable and phonemes at syllable-boundaries that are not separated by open juncture /-/ are said to be in close juncture. Two consonants, or two vowels, or a vowel and a consonant in close juncture, behave in a characteristically different way from phonemes in open juncture:

Clifford: [ˈbɪbˈbɒmfɑː] /ˈbɪbˈbɒmfɑː/ "big bonfire"

Elaine : [ɔːɡɛtˈkɪsˌʔz̥] /ɑːɡekˈklewz/ "I get clothes"

d) Extended Juncture is a fourth type of juncture. Like open juncture, this occurs both at word-boundaries and at syllable-boundaries within a word. It shows features common to both

open and close types of juncture. In the phonemic transcription it is represented by the doubling of a consonantal item - usually, though not always, a plosive. Among 9-year olds extended juncture seems to occur mainly in deliberate, emphatic utterances:

Jeanette: [ˈɛɹɹ, pʰɛɹɹtʃavə] /ˈelp, piʃtʃavə+/ "help each other."

Jenny: [ˈstæ.ən, aʃpɪæɹɹ] /ˈstæjən, apˈplæjt+/ "staying up late."

Elaine: [ˈɔs.pɪɹɹ, ɹɔ] /ˈɔsspit, ɔw+/ "hospital."

iii Definition of Initial, Medial and Final Consonants

It is now possible to undertake a strictly phonemic definition of syllable-initial, syllable-medial and syllable-final consonants in terms of the stress-markers /' / and /, / and the juncture-markers /+ / and /- /.

Syllable-initial consonants in phonemic terms are those which follow /+ / or /- / or the stress-markers /' /, /, /.

In future we may refer to these consonants merely as 'initial', these being distinguished from utterance-initial consonants which follow only /+ /, and from word-initial consonants.

Reference may also be made of course to initial clusters and vowels. Syllable-medial, or 'medial', consonants are inter-vocalic and unstressed; in other words they may

neither follow nor precede /+/, /-/, /' / or /, /.

Syllable-final consonants - henceforth 'final' - are those which precede /+ / or /- /, /' / or /, /. Final consonants, or consonant clusters or vowels, do not necessarily correspond to word-final items. Utterance-final phonemes are those which immediately precede /+ /.

The markers for stress and for juncture are perhaps complementary rather than dependent on each other in indicating the syllabic status of a phoneme. Thus in ['kan²t²ri] /'kant,ri/ the stress indicates that /tr/ is an initial cluster whose component parts are in close juncture - evidenced by the devoicing of /r/. In ['kan²t²,vɛi] /'kant-,ri/ not only the placement of the stress but also the affricated release of the /t/ and the absence of devoicing of /r/ mark open juncture between /t/ and /r/. The difference between ['hɪst²rɛi] /'histri/ "history" and [dɪs²t²ri] /dis'tri/ "this tree", is the difference between a medial cluster /str/ and a sequence of final /s/ followed by initial /tr/.

3.2 External Juncture

1 Vowels

After /+ / it is quite common for a vowel to have a glottal onset [ʔ]:

Diane: [ʔʔ, fə'fæivə?] /ʔu, fə'fæjvret/ "What's your favourite....?"

Ross: [ʔAz'nəwɡud] /ʔa:z'nəwɡud/ "I was no good"

John: [ʔ2ð:2t] /+ʔa:t+/ "Art."

Or there may be a glottal fricative onset [h] or [ʔ]:

David Gl: [hɪ'zæ2'ɡuʔd] /+hi'zæk'ɡud+/ "Is that good?"

Ross: [ʔAbbin'plæən] /+(h)əjbbin'plæjən/ "I've been playing"

All vowels tend to have greater duration before /+/, whether in open or closed syllables. This tendency is most marked when the syllable is stressed, though unstressed vowels are also frequently lengthened:

Elaine: [ʔ'basən' tʔæf] /'basən'træjn+/ "bus and train."

David Gl: [ɪnə'fæ:ɪs] /'ɪndə'fæjs+/ "... in the face."

Jeanette: [ʔfɪŋkɪ'z'ɡuʔd] /|fɪŋkɪts'ɡud+/ "Think it's good."

Diane: [ʔwɪn2dæ-mɪ'ʔd.2tə*]

/ʔwɪntdæ:mi'a:nts+/ "Went down my Aunt's."

Elaine: [ʔdɪ'ʔən'wʌnɪʔ] /'dɪtən'wonɪt+/ "didn't want it."

/ə/ may have secondary or even primary stress in utterance-final syllables, although in other syllables in the utterance it is rare for this to happen. In this position too it has special open, fronted and sometimes lengthened allophones, which are unique to utterance-final positions:

Vivienne: [ʔtʃɪtʃ] , /ʔtɪtʃə+/ "teacher"

Teresa: [ʔʊtʔə,pʰɔ.s*] /'utte,pəs+/ "octopus"

Jeanette: [bɛ2wɪ'ne,ʔə] /bɛtwɪ'ne,və+/ "but we never."

Elaine: [sɛɪŋʔ'ʊŋwɪvə•] /'saniŋk'ronwivə+/ "Something
wrong with her."

David Gr: ['æɪnʔ'jɛʃ] /'æjnt'jə+/ "Ain't you?"

Other vowels may have special conditioned allophones in this position. /i/ may be more open here, with an allophone in the region of front half-open, there being no danger of confusion with /e/ which does not occur utterance-finally. For the same reason the long vowels /o:/, /e:/ and occasionally /i:/, /æ:/ may have shorter than usual allophones in this situation, since /i/, /e/, /æ/ and /o/ may not occur in an utterance-final open stressed syllable.

ii Consonants

Some continuant consonants may have glottal onset after /+/:

Elaine: ['²ɪA•ətʃɪn] /+'raɪtɪn/ "Writing."

Elaine: ['²wɪ²f] /+(ə)'wɪpɪ+/ "(A) width."

Ross: ['²jɛ•] /+'jɛ:/ "Yes"

though this is less common than with vowels. In the same way as vowels are lengthened before /+/, certain continuants can also be lengthened - /s/ in particular:

Jenny: ['ævənɪ'pʰɛ•əʔsɪ] /'ævənɪ'pets+/ "have any pets?"

Clifford: [ɔ•'kɪvʊʃ•] /ow'klews+/ "all clothes."

Jeanette: ['ɹɔk^ʔɪʔs.] /'rokɪts+/ "rockets."

Initial and final lenis plosives tend to be devoiced, and this tendency is most marked utterance-finally:

Jenny:	[,wɛnʔ'blaɪndʔ]	/,wɛnt'blaɪnd+/	"went blind."
Ross:	[,naɪm'boʔ]	/,naɪm'boʔ+/	"nine bob."
Vivienne:	[,wɛʔə'lɪf]	/,wɛʔə'lɪf+/	"Where do you live?"
Diane:	[,bɔʔksɪʔ]	/,bɔksɪz+/	"boxes."
Russell:	[,bɔʔksɪsʔ]	/,bɔksɪs+/	"boxes."

Fortis plosives are almost invariably glottalized in this position, where they may be heavily aspirated or affricated :

John:	[,ʔä.ʔtʰ]	/+a:t+/	"Art."
Jackie:	[,wam'wɛ1ʔkʰ]	/,wam'wi:k+/	"one week."
Philip:	[,fɪlɪʔpʰ]	/,fɪlɪp+/	"Philip."

Exceptionally, ejective allophones of plosives are found; these occur only utterance-finally in this material:

Clifford:	[jʰ'æytʰə'gɛʔə'stɪʔʔkʰ]	/ju'ævtə'getə'stɪk+/	"You have to get a stick."
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/pʔ, /tʰ, /k/ may all have the glottal stop [ʔ] as an allophone before /+/, where it may have aspirated release:

Clifford:	[,ʔäɪʔh]	/+æjt+/	"Eight."
John:	[dʰə'dämʔ]	/ðə'dæmp+/	"the dump."
Clifford:	[ə'bæŋʔ]	/ə'bæŋk+/	"a bank."

In clusters of fortis fricative + fortis plosive the plosive is generally unaspirated. However, before /+/ it may have some aspiration:

Jeanette:	[,ʃɔpɪn,lɪs.tʰ]	/,ʃɔpɪn,lɪst+/	"Shopping list."
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3.3 Open Juncture

1 Vowels

Open juncture /-/ marks the division of speech into syllables, though as was suggested in 3.111 above, these phonemic syllable boundaries do not necessarily correspond either to morpheme- or word-boundaries. Each syllable consists of the minimum of one vowel, flanked by varying numbers of consonants. It may happen that sequences of two vowels, possibly more, may occur in close juncture, as in "Know how he is?" - /'nəwæ:ɪj'ɪz+/. Certain sequences, however, are not tolerated within a word, and are possible only if /-/ is postulated to intervene between them. No short vowel other than /i/ or /u/ may precede another vowel in close juncture with it:

Jackie: [nɪ'qʊwæɪs] /no-ɔwɪs+/"Not always."

Ross: [ðɪ'ɪndʒeɪz] /ði'ɪndʒeɪz/"the injuries"

David G1: ['stɔ:ɪtə'snə,kwɪn] /'stɔ:ɪtə-ə'snə,kwɪn /
"story of the Snow Queen."

Fronting and Retracting vowels, and less often long vowels, may be followed by other vocalic phonemes in close juncture. Open juncture may be present when the two vowels are separated by the glottal stop. Compare:

Clifford: [ɪ'ɔɪ²lɪv'ɔɪ] /'ɔw-ɪ'ɔlɪv'ɔɪl+/"all olive oil."

and

Clifford: [ɪ'ɔɪɒn-tə'fɪnz] /ɔw'ɔɪɒn-tə'fɪnz/
"all oil on to things"

Diane: [tʰɛlɪfəʊn-ɪso:] /tɛli,fəʊn-ɪso:/

This was interpreted by another speaker as "telephone, saw",
then corrected by Diane to:

[tʰɛlɪfəʊnz-ɪso:] /tɛlifəʊnz-ɪso:/

"Telephones, or..."

A sustained glottal closure may have two functions - one
as an allophone of a final plosive, the other as an onset
to a vowel after /-/:

Tony: [dæʔʔæɪkʰəy,nɪnʰ] /dæt-ɪæjkw,nɪn+/

"that acorning."

However, length of consonants is not by itself a completely
reliable marker of open juncture. In

Ross: [dædzɪləftɛndʰ] /dædzɪləftɛnd-/

"Dad's left, and,"

there is no open juncture between /f/ and /t/, despite the
length of /f/, because the unaspirated /t/ is more con-
sistent with close juncture. Lengthened continuant conson-
ants may also arise from the phenomenon of extended juncture.

When a fortis fricative is followed by a fortis plosive and
the plosive is aspirated or affricated, then open juncture
is operating:

Kathleen: [kɪˈsɪtʰeɪ] /,klɑːs-ɪtuw+/ "Class 2"

Teresa: [ɒsɪkʰɪle] /ɒs-ɪkale/ "What colour..."

Clifford: [iˈkʌmʃʰeɪʃku] /iˈkʌmʃ-təɪsku/

"He comes to school"

David G1: [ə'ndʌs'tpʰælis] /ə'naɪs-'pælis+/ "a nice palace."
or "an ice palace."

In clusters of fortis plosive + continuant /w/, /j/, /r/ or /l/ it is usual for the continuant to be devoiced and possibly realized as a fricative. If a preceding fortis plosive does not have this effect on one of these continuant phonemes then open juncture is present:

David Gr: [ˈæɪnʔˈjʌp̥] /ˈæɪnt-'jə+/ "Ain't you?"
" : [ˌlæɪʔkˈwʌʔh] /ˌlæk-'wʌt+/ "Like what?"
Jenny: [ˈhæɪnrɪ'wɪkˈlændən] /ˈhætnɪ'wɪk-'lændən/
"Hackney Wick, London"

Tony: [ˈkænʔtʰˌvɛɪ] /ˈkænt-ɹɪj+/ "country"

Allophones associated with medial position will not be found before or after /-/ - such as [ɸ], [ɸd], [ɸg] or the alveolar flap [ɸ] for /t/. [ɸ] may occur after /-/ as an allophone of word-initial /ð/:

Philip: [ʌʔp,ɸɛ] /apɹ,ðe:+/ "up there."

Lenis plosives may be affricated before /-/, and /d/ is particularly liable to such affrication:

John: [ə'wɒdʔˌrɛɪβ] /ə'wɒdɹɛwɪb+/ "a wardrobe"
Russell: [ˈkɑ:bɒdʔˌwæn] /ˈkɑ:bɒdɹ-wæn/ "cardboard one"

/l/ has vocoidal realization only in final position and before other consonants. When vocoidal glides appear for /ɪl/, /el/ and other sequences of vowel + /l/, before other vowels, then open juncture must be postulated after /l/,

to show that /l/ is final and not medial:

Jackie: [ðə'gɜːfnn'gɛɹ] /ðə'gel-unnə'gel-/

"The girl and the girl"

Vivienne: [ʔɜːs'gɛɹəntʰ] /-ɪs'gel-ənd-/ "this girl, and,"

/h/ may occur initially or medially, but only singly. If it follows a consonant then open juncture must be presumed present, to make /h/ syllable-initial:

David G1: ['ɛnɪhɪŋ'kɛɹɛɹs] /'ɛnɪhɪŋ'kɛɹs+/ "Anything else?"

Philip: [βəʔtʰ'hɪɹə] /bət-'hi:/ "but here..."

Clifford: ['dɪɹəʔn,hæv] /'dɪtən-,hæv/ "didn't have"

3.4 Close Juncture

i Vowels

The retracting and fronting series of vowels may all be followed by other vowels in close juncture. The 'long' vowels /i:, e:, æ:, ɛ:, a:, o:/ may be followed by another vowel, though it is more usual for linking or intrusive /r/ to intervene. Of the short vowels only /ɪ/ and /ʊ/ may be in close juncture with a succeeding vowel (see section 4.1 below.).

ii Consonants

An initial consonant or cluster is in close juncture with the vowel that follows it, a final consonant or cluster is in close juncture with the vowel preceding it, and a medial consonant or cluster is in close juncture with

the vowels on either side. In these situations there is no potential contrast with other types of juncture: contrast with open juncture is potential in consonant clusters or sequences at syllable-boundaries. Indeed, we may usefully define a cluster as being a close-knit sequence of consonants, the parts of which are in close juncture. A 'sequence', for the purposes of this discussion, consists of articulatory segments which are phonetically relatively disjunct; these may be in either open or close juncture. Contrasts between open and close juncture are found in:

a) Fortis fricative + plosive.

If sequences such as /sp/, /st/, /sk/, /ʃt/ are in close juncture the plosive will be unaspirated and may be lenis. If juncture is open, however, the plosive will be fortis and aspirated or affricated:

Ross: [ˈlɑːst^hʰɪm] /ˈlɑːs-tajm/ "last time"

(and for other examples of open juncture see 3.3 ii above)

Vivienne: [ˈsɪstəs] /ˈsɪstəs+/ "sisters."

Diane: [ˈmɒnɪˌstə] /ˈmɒnɪ-stə+/ "monster."

Teresa: [nəˈspɛɪsəˌbeɪˈɡɒd̥] /nəˈspɛwsəbɪjˈɡɒd+/

"and it's supposed to be God."

The affricate /tʃ/ has a similar effect:

Jenny: [bɪˈwɪtʃt̪ænd̥] /bɪˈwɪtʃt̪ænd-/ "Bewitched, and,"

Diane: [ɪt̪s-t̪əˈmaɪt̪-t̪əkiːˈræp+] /ɪts-t̪əˈmaɪt̪-t̪əkiːˈræp+/

"it's too much to clear up."

b) Fortis consonant + continuant.

Continuants /w/, /j/, /r/ and /l/ are devoiced after a fortis consonant with which they are in close juncture, whereas if open juncture occurs such devoicing is absent:

Jenny:	[^h æʔni ^h wiʔk ^h ˈlændən]	/ ^h ætni ^h wik-ˈlændən/	"Hackney Wick, London"
Tony:	[^h kanʔt ^h ˌvəi]	/ ^h kant-riʃ/	"country"
Kathleen:	[^h fæʔtʃəi]	/ ^h fættriʃ/	"factory"
David Gr:	[^h dɪ ^h ˌfɛə.nʔ]	/ ^h dɪ,frɛnt+/	"different?"
Ross:	[ə, ^h kwɪʔmənʔ]	/ə, ^h kwɪpmənt/	"equipment"
Kathleen:	[ˈlɑsˌ,ʔtʃə]	/ˈlɑ:s-,tʃə:/	"last year"

c) Coalescence

Where sequences of two or more consonantal phonemes coalesce into single segments open juncture cannot be present.

Common instances of this in Cockney are the coalescence of /t,d,s,z/ + /j/ into /tʃ,dʒ,f,ʒ/, and of alveolar consonants + /ð/ into dentalized segments - thus /sð/ into [ʃ], /zð/ into [ʒ], /dð/ into [d̪] and so on - or into long alveolar segments - [s:, z:, d:]. Sequences of consonant + /j/ may also coalesce into palatalized segments, and consonant + /w/ may produce labialized segments:

Diane:	[^h ʌ, ^h ʃə ^h ˌfæɪvəʔ]	/ ^h ʌ, ^h ʃə ^h ˌfæɪvrət/	"What's your favourite?"
John:	[ˈdɪd̪ɪ ^h ˌæv]	/ˈdɪd̪ɪ ^h ˌæv/	
Vivienne:	[ˈkɪl̪d̪ɪ ^h ˌrɒŋˌlæɪdɪ]	/ˈkɪl̪d̪ɪ ^h ˌrɒŋˌlæɪdɪ/	"killed the wrong lady"

Clifford: [in:f'ɪnfənts] /ɪnni'ɪmfənts/ "in the infants"
 " : ['sæʔə:diʒr'kæʔn] /'sætədiʒji'kæn+/ "Saturdays you can."
 Ross: ['spɛɪbɛr] /'spɪjbwɛj/ "speedway"

d) Assimilation.

Close juncture between two consonants may also be indicated by the assimilation of one towards the other in features of place or manner of articulation, or voicing. The fact that two neighbouring phonemes are not assimilated in one of these ways does not, however, mean that the two may not be in close juncture:

Ross: ['wam:ɛɪd'kærmɛm] /'wammɪjd'kæjmɛwm/ "when we'd come home"
 Jeanette: ['tɛlin'ɲɔɪ] /'telɪn'laɪ/ "telling lie(s)"
 Kathleen: ['tsæn,tʰɔ:ŋg] /'sæn,tajns/ "sometimes"
 Vivienne: ['tɪʔæŋtɔ] /'traɪŋtɔ/ "trying to"
 Jenny: [ˌnɔːktɛm'ɔf] /ˌnɔktɛm'ɔf-/ "knocked them off"
 Kathleen: ['ɹɪptə,pɔʊ] /'ripta,pɔw/ "ripped up all..."

3.5 Extended Juncture

Extended juncture is likely to occur at syllable-boundaries within an utterance. The main feature of this type of juncture is the lengthening of a consonantal phoneme. When the consonant in question is a fortis plosive, this

lengthening takes the form of glottalization, so that, although in a medial position, the plosive behaves as a final consonant:

Jeanette: [ʼɛA2,pʰeɪ2ʼʔava] /ʼelp,pɪjtʼʔave+/ "help each other."

This is represented by a doubling of the consonantal symbol in the phonemic transcription, on the pattern of such utterances as:

Ross: [wʌ2,kʰAɛnd] /wok,kajnd/ "What kind...?"

Clifford: [Aʼm2tʰuɐv] /aɪʼettuɐv/ "I had to have..."

where the glottal stop is classified conveniently as an allophone of the fortis plosive at the place of articulation of the next consonant phoneme.

Within a word extended juncture is postulated where a single medial consonant is lengthened:

John: [ʼtʰɛl:ɛɪ] /ʼtelliɪ/ "telly"

" : [ʼbuay:ɔ] /ʼbravve+/ "brother."

though this is rare among the 9-year old speakers. Much more common is the occurrence of extended juncture in clusters at syllable-boundaries within the word and at word-boundaries. The first part of the cluster behaves as if it were syllable-final; that is, fortis plosives are glottalized, continuants may be lengthened. The second part of the cluster, however, continues to behave as if the cluster

were medial, and is influenced by the features of the preceding segment, with which it is in close juncture. Continuants are devoiced by a preceding fortis consonant, fortis plosives are unaspirated after a fortis fricative. The effect of this is particularly noticeable at word-boundaries, where segments that would normally be in open juncture take on the characteristics of clusters or sequences in close juncture:

Kathleen: [ˈmæɪɹʔ, kʷənʰ] /ˈmæjk, kwan+/ "make one."

Jenny: [ˈstæ·ənʌʔˈpɪæɪɹʔ] /ˈstæjənʌpˈplæjt+/
"staying up late."

The close juncture within the cluster may also manifest itself in coalescence of features, such that /pw/, for example, becomes [p̚], or /fr/ becomes [ɸ]:

Jenny: [ˈlæʔ, p̚wumən] /ˈlæp, pwumən/ "Lapp-woman"

Jackie: [ˈlɛʔɸ ɸ·ɔkʰɪ·ʔs] /ˈlɛtɒfˈfrɔkɪts+/
"Let off rockets."

Expressed in algebraic terms, extended juncture may be shown to involve the addition of features of an extra phonemic item to a medial unit, so that it comes to resemble a sequence of syllable-final unit + syllable-initial unit. To a single inter-vocalic consonant /C₁/ in / V C₁ V / is added the feature of a second /C₁/ - a fortis plosive is glottalized, a continuant lengthened, or the stop phase of a lenis plosive is sustained - to give / V C₁C₁ V /. To an

inter-vocalic cluster / V C₁C₂V / is added the features of a second / C₁ /, to produce / V C₁C₁C₂V /. In nasal + plosive clusters extended juncture is manifest in a slightly different way, by a lengthening of the second rather than the first element. / V C₁C₂V / becomes / V C₁C₂C₂V /. Thus [ŋk] becomes [ŋ²k] in:

Vivienne: [ʔə:ˈɹaŋ²,k²oo] /+ə:ˈraŋk,kow/ "Her uncle"

Sequences of fortis plosive + fricative in inter-vocalic position are invariably glottalized, so that there is no need to distinguish between close and extended juncture in this situation:

Jenny: [ˈp^hʔksɪz] /ˈpɪksɪz/ "pixies"

Clifford: [gɒʔəˈflɛ²kʃən] /gotəˈflekʃən/ "got a(n in)fection"

Philip: [p^hʊ²ˈlɒləɪ,stri²ksˈa²] /putˈlɒlɪ²stɪksˈap/
"put lolly-sticks up"

Sequences of fortis plosive + continuant in medial position are also very often glottalized, though not invariably so, and it will be found necessary to distinguish extended and close juncture in this position:

Teresa: [ˈsɛk²pə,t²ɛvəɪ] /ˈsek²rə,teri²j/ "secretary"

Vivienne: [ˈgɛwt²məˈɹaŋɪ,k²oo] /*gɛwtwəˈraŋ-,kow+/
"go to her uncle."

Ross: [ˈmɛ²tʃəsɪz] /ˈmɛttresɪz/ "matresses"

Jenny: [ˈlæ²ɹ²p²wʊmɪ] /ˈlæp²pwʊmən/ "Lapp-woman"

3.6 Hesitation

It may happen that the continuum of speech may be broken by a pause, longer than [~], which is the result of a speaker's hesitation, or of a change of mind which results in the utterance being started afresh, or continuing with a different rhythmic or syntactic pattern. This is marked in the phonetic transcription by [:]. It is not an aspect of juncture, since segments preceding it show no anticipation of a break in the utterance in the way that /+/-/ or /-/-/ is signalled by lengthening of segments or deceleration of the tempo of utterance. A symbol for this type of break will, however, be useful, since after the break phonemes have characteristic allophones, behaving as after /+/. The 'hesitation' or 'unplanned pause' feature may be symbolized /?/:

- Ross: [jə'hɛvə : ˈɛvə'hɛd] /jə'hevə? 'evə'hɛ:də /
"you ever.. ever heard of...?"
- Tony: [ˈnɛz'ɛɪtən : ˈɛtən'hɪntʃɪz'aɪ]
/ˈnɛz'ɛɪtən? 'ɛtən'hɪntʃɪz'aɪ+/
"And it was eighteen... eighteen inches high."

3.7 Necessity of /-/-/

In the phonemic transcriptions of this and ensuing chapters, /-/-/ will not seem to occur very frequently. The task of indicating the presence of open juncture is performed

adequately in the majority of cases by the stress-markers /' / and /, /, so that for the sake of brevity /- / may be omitted. This is not to say that the stress-markers carry any implication of open juncture. It is merely that once consonants have been defined as initial, medial or final by the placing of stress, enough is known about the characteristics of consonants in these positions to make features such as glottalization, aspiration and so on immediately inferable. One proviso has to be made, to avoid any ambiguity. This is that where the same phoneme, or voiced and voiceless members of a homorganic pair of phonemes such as /t,d/, /f,v/, /k,g/, occur immediately before and immediately after a stress, the two are in close juncture unless otherwise indicated. Thus /hæd'tuw/ "had two", /dæg'kæjm/ "Dad came", /'sez,səw/ "says so", /set'tembə/ "September", /'sis,stə/ "sister" and so on.

In /'kant,rij/ we can see that /t/ is final, and therefore realized as [t], [t^h] or [t^s]. /r/ is initial and therefore voiced, so that it needs no /-β/ to convey that /t/ and /r/ are in open juncture. In /'kant,triʃ/, on the other hand, the first /t/ is final, but in close juncture with the second /t/ by virtue of the rule framed above. /t/ and /r/ are in close juncture in an initial cluster, so that /r/ will be voiceless. The first /t/, being in close juncture with

the second, will be realized as [2].

The situations where /-/ will need to be used are predominantly between certain vowels, between phonemes separated by a pause [~], in those cases where open juncture is used by a speaker to some special effect, as in slow, careful speech, and after /l/, to indicate that it has vocoidal or velarized lateral realization:

Jackie:	[nɪ'ɑwɪs]	/no-'owwɪs+/ "Not always."
John:	[gɪt'æɪt]	/got-'æɪt/ "got eight"
Vivienne:	[tɛn'ɛgget'hæɪs]	/tɛn-'egget'hæɪs/
Terry:		"Ten, Edgate House"
(7,7)	[pɪj'tel'ɪj]	/pɪj-'el-'ɪj / "...P - L - E."
Jackie	[ðe'gɛrɪnn'gɛɪ]	/ðe'gel-unne'gel-/
		" the girl and the girl"

4.1 Phonological System - Vowels

1 Phonetic Segments

Short Vowels.

/ɪ/	-	[ɪ, ɪ̃, e, ɛ]	in "big, bit, skipping, skinny"
/e/	-	[ɛ, ɛ̃, e, ɛ̃]	in "when, every, against"
/æ/	-	[æ, æ̃, ɛ, ɛ̃]	in "man, cat, banger, hand"
/a/	-	[a, ʌ, ɜ, ɜ̃]	in "one, up, something"
/ə/	-	[ə, ɜ̃, ʊ]	in "a, and, for", stressed "just"
/o/	-	[ɔ, ɔ̃, ʊ, ʊ̃, ʌ]	in "what, bonfire, dog"
/u/	-	[u, ʊ̃, ʌ̃, ʌ̃̃, ʊ̃̃]	in "could, look, bedroom"

Long Vowels.

/i:/	- [ɪ, ɪə, ije]	in "year, really, beer, ear"
/e:/	- [ɛ, ɛi, ɛə, ɛje]	in "fair, aeroplane, air"
/æ:/	- [æ, æə, æʊ, æʊ]	in "now, brown, our, ow!"
/ə:/	- [ə, ɛi, ɔi]	in "first, burnt, her"
/ɑ:/	- [ɑ, ɑi, ʌi, ɑ]	in "class, art, half, are"
/o:/	- [ɔ, ɔə, ɔwe, ʌi]	in "before, yourn, or"

Fronting Vowels.

/ij/	- [əi, ɛi, ɪi]	in "me, people, nosey, he"
/æj/	- [æi, æe, ɔi]	in "play, eight, okay, eh?"
/aj/	- [ɑi, ɑe, ɔe, ɔ]	in "kind, night, bonfire, I"
/oj/	- [ɔi, ʌi, ɔi]	in "boy, oil, noisy, Oi!"

Retracting Vowels.

/əw/	- [ɛʊ, ɛu, ɛi]	in "road, go, open, Oh!"
/uw/	- [əʊ, əu, əy, uɪ, ʌi]	in "two, mood, you, who?"
/ow/	- [ɔɔ, ʊt, ɔɔ, ɔi]	in "fourth, short, call, all"
/aw/	- [ɑɪ, ʌɪ, ɔɔ, ʌɪ]	in "doll, coal, roller, hole"

1 Short Vowels

The seven 'short' vowels have certain phonological and distributional characteristics which can be said to define them as a class. All of them are short, relative to the

members of the other classes of vowels, any one of which can appear as a meaningful utterance on its own - /+i:+/ "Here."; /+æj+/ "Eh?"; /+aw+/ "Hole" or "Oh!"

No short vowel may appear in an open primary-stressed syllable before /+/. In 9-year old speech /ə/ may carry stress in this position, but it must be secondary stress:

Jeanette: [bəʔwɪ'ne,ys] /bətwi'ne,və+/ "but we never."

Kathleen: [ə'bɹæ,vɛ] /ə'bra,və+/ "a brother."

Across word-boundaries only /i/ and /u/ of the short vowels may precede other vowels in close juncture, /ə/ must be separated from a subsequent vowel by /-/:

Ross: [ɒntʃən'ækn̩] /ɒntʃən'æjkun/ "on to an acorn"

2ⁿ : [ɪnɪ'aj] /ɪnnɪ'aj+/ "in the eye."

Jenny [ʔəvjə'eve] /+əvjə'eve/ "Have you ever...?"

'Crowding' of Short Vowels

There is a noticeable lack of symmetry in the relative articulatory positions of Cockney short vowels as shown in Figure 1. This is caused by the apparent crowding of three vowel items into the region between above half-open and open front - /e/, /æ/ and /a/. It can be seen that there is some overlap of /e/ and /æ/ in this system, in the area of [ɛ]. This is a feature of adult Cockney, and it is probably to avoid confusion caused by overlapping of these two phonemes that Cockney speakers - and indeed, many

Figure 1. Articulatory Areas Covered by Short Vowels

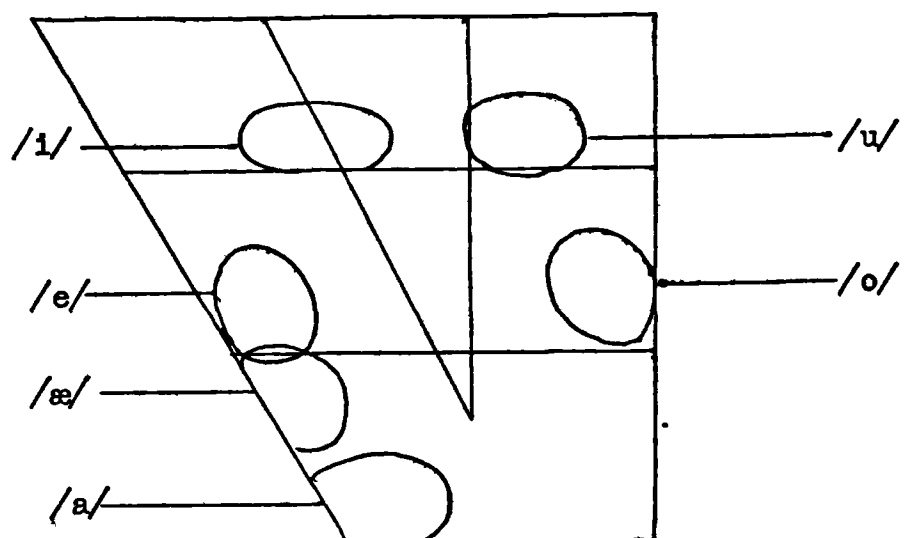
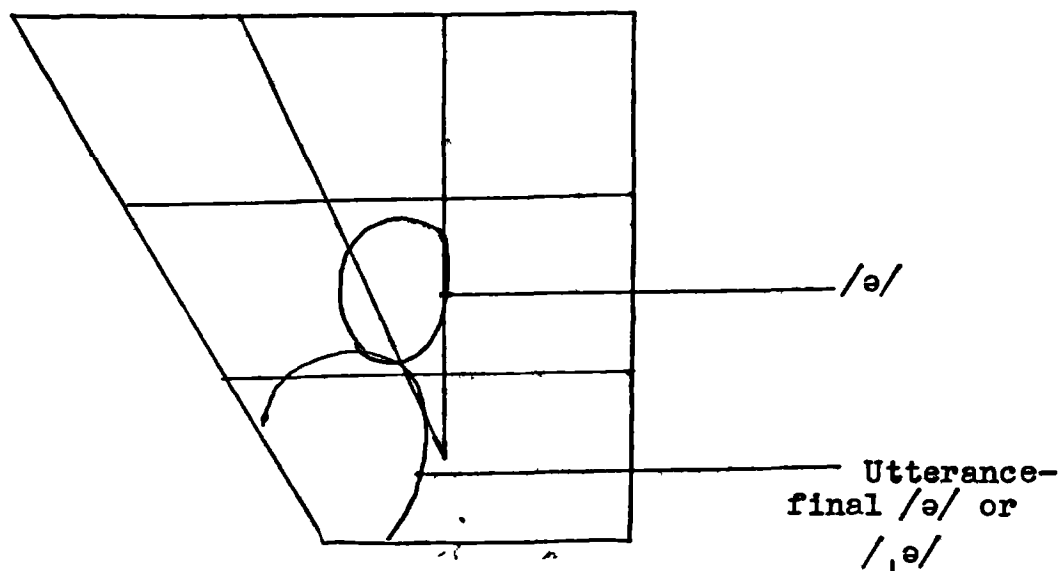


Figure 1A. Articulatory Area Covered by /ə/



speakers of Southern English forms other than Cockney - lengthen /æ/ in some positions.

Though there appears from Figure 1A to be a similar overlap of /a/ and /e/ this is not in fact the case. The open and fronted allophones of /e/ occur only in stressed and unstressed word-final positions, predominantly before /+/, where /a/ never occurs, stressed or unstressed.

11 Long Vowels

The class of vowels /i:/, /e:/, /æ:/, /ə:/, /ɑ:/ and /o:/ are characterized by both length and glide. /i:/, /e:/ and /o:/ have allophones which are glides to centre [ɪə], [eə] and [oə], while /æ:/ may glide to centre or, in a more extensive glide, to centralized back half-close, with some lip-rounding [æ·ʊ] or [æʊ]. /ɑ:/ is only slightly glided, if at all, and /ə:/ is a long vowel at central or front of central position. An equally good case could probably be made out for treating this set of vowels as glides to centre. However, in the oppositions /ɪ/-/i:/, /e/-/e:/, /æ/-/æ:/, /o/-/o:/, it is the feature of length which appears to be most significant in Cockney, producing contrasts of "his - here's", "merry - Mary", "at - out", "Polly - poorly" (where there may also be some contrast of tongue-position, /o:/ having a slightly closer realization than /o/ in closed syllables). Hurford (1967) made the finding that glided

allophones of /i:/, /e:/, /æ:/ and /ə:/ tend to occur more frequently in utterance-final contexts, while long unglided vowels are more frequent within an utterance (pp. 401-3, 424, 431, 441. -). Now it is in utterance-medial contexts that short and long vowels in the pairs discussed above may be in contrast, whereas utterance-finally there is no contrast; /e/, /æ/ and /o/ do not occur in open utterance-final syllables at all, and /i/ does not occur there stressed. Thus, where there is the potential for contrasts between long and short vowels, it is the feature of length which makes /i:/, /e:/, /æ:/, /ə:/, /ɑ:/ and /o:/ distinctive, rather than that of central glide

Linking with Other Vowels

It is possible for all the long vowels to occur before another vowel in close juncture, though this happens only rarely:

Elaine:	['sə·ə 'stɑ:fiʃ]	/ 'sə:ə 'stɑ:fiʃ /	"saw a starfish"
Teresa:	['jɛ·ɪ t 'weɪ]	/ 'jɛ:ɪ t 'weɪ /	"Yeah, it were"
Jeanette	['fɛ: və frəm, ne: əm wi]	/ 'fɛ: və frəm, ne: əm wi /	"further from there and we..."

Much more common is for these vowels to be linked to a following vowel by /r/, which may or may not be justified on morphemic grounds:

Elaine:	['ʔɑ:n t 'vi:rə]	/ + 'ɑ:nt 'vi:rə + /	"Aunt Vera."
---------	--------------------	----------------------	--------------

Vivienne:	[kʰan²˥˥:ɪənəi,wa⁰n]	/kɑ:nt˥˥i:renɪj,wən+/	"can't hear anyone."
Kathleen:	[ˈwɛ̃ːɹɪj]	/ˈwe:ɹəjˈlɪv+/	"where I live."
Teresa:	[æ:ˈvɑːdʰə,jəu]	/æ:ˈrawdə,juw+/	"How old are you?"
Tony:	[ˈnə̃ːɹɪzˈmæuð]	/ˈnæ:ɹɪzˈmuwð-/	"now he's moved"
Teresa:	[ˌɹəːˈvasbən˨˨˥˥]	/ˌə:ˈrasbən+/	"her husband."
Kathleen:	[ˈdɹɔ:ɹɪn]	/ˈdɹo:ɹɪn/	"Drawing"

111 Fronting Vowels

The class of fronting vowels, or glides to front, consists of four phonemes, /ɪj/, /æj/, /aj/ and /ej/. In stressed prominent positions the glide is extensive in all these vowels; before other vowels and in unstressed syllables there may be less movement of the tongue. /aj/ in particular has variants which may be only slightly glided, or even monophthongal - [aə], [ä:].

Clifford:	[fˈθeɪfɪz,bleɪdɪn]	/fˈtɪjfwɛz,blijdɪn/	"my teeth was bleeding"
Jackie:	[ɔ̃ːt˥˥əˈplæj˥˥]	/æʊtəˈplæj+/	"out to play."
Elaine:	[ˈkɹɑ:ɪn]	/ˈkɹəj,ɪn+/	"crying."
David Gr	[əˈdɪb˥˥ɹɪ]	/ətˈajbəri+/	"at Highbury."
Jackie:	[ɹɪˈɹændlɪk˥˥]	/ɹəjˈrændləjk˥˥/	"right round like that."
Jackie:	[ˈbɔ:ɹənəˈbɔ:ɹ]	/ˈbojənðəˈboj/	"boy and the boy"

All the fronting vowels may appear before other vowels in close juncture.

Figure 2. Long Vowels

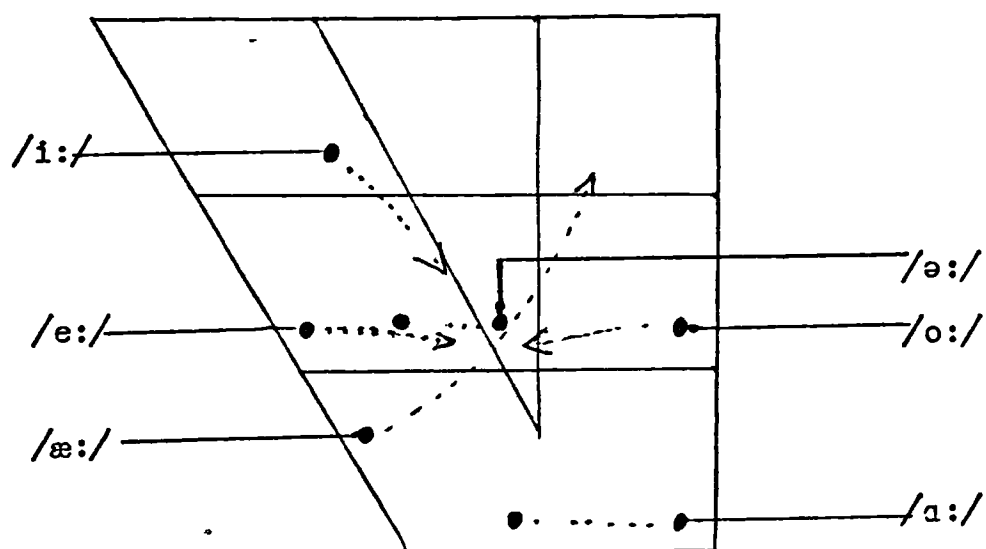
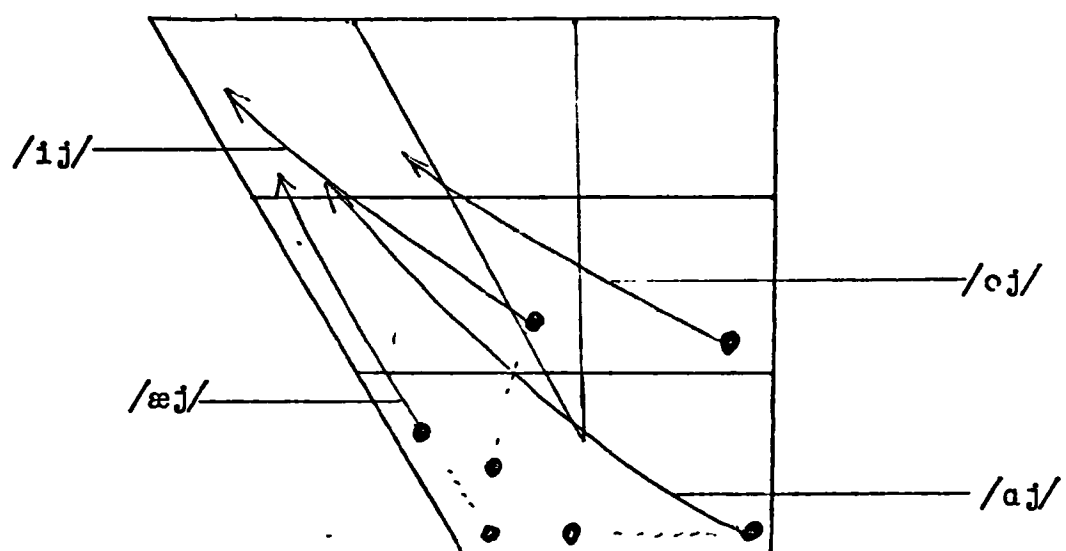


Figure 3. Fronting Vowels



iv Retracting Vowels

In the phonetic data gathered from the children for this survey are found a number of different vocoid glides from various starting-points towards a back half-close position. With a few exceptions, these occur in words which contain /l/, and are realizations of different sequences of vowel + /l/:

Teresa:	[,ʌp ^h ʌnɪs'ɪ.ʌ]	"up on this hill"
Ross:	[ɛpə'wɛɹd]	"in the world"
Clifford I (8,1):	[ɪ ^h æʊs.əm'njɛvə]	"Tales from Europe"
Carl (5, 10):	[fə'sæɪɹ]	"for sale"
Denise M (6,7):	[,waɪə'ðɛ'mavə]	"while their mother..."
Terry (7,7):	[ɪmɪl'sɔldə]	"miles older"
Vivienne:	[ɪ'ɔldfɔrd ^z ,rɔwb'beɪ]	"Old Ford Road, Bow"
Jackie:	[ɪ'bɪg.ɪd ^z ɔɪ]	"big doll"
Elaine:	[ɔp ^u wɛɪs]	"always"
Clifford:	[ɪ'ɔlɪv'ɔɪɪ]	"olive oil"
Clifford:	[ɪo.ɪwɔ.ɪn]	"all water in"

When vowel + /l/ sequences are followed by a vowel within the word, /l/ is always realized as a lateral, non-velarized contoid:

Ross:	[sɪ'mɪd ^l ɪɪz]	"some dollies"
Jackie:	[ɪ'wɪɪ,ɪɪs]	"wireless"
Clifford:	[ɪ'ɔlɪv'ɔɪɪ]	"olive oil"
John:	[ɪt ^h ɛɪ.ɪ]	"telly"

When, however, the sequence /V+l+V/ crosses a word-boundary, so that /l/ is word-final, /l/ may be realized either as 'clear' [l], or as a vocoid glide to back half-close to close, or as a 'dark', velarized [ɫ]:

John:	[fʊlə'wʊd ²]	"full of wood"
Teresa:	[,ʊɫ ^t ə't ^s Å·ɪm]	"all the time"
Clifford:	[¹ 2əpɹɪz'faɪwə2ks]	"all his fireworks"
Elaine:	[¹ o·ɫə,t ^s Å·ɪ]	"all the time"

Utterance-finally the sequence / V+l/ may be realized as a vocoid glide, as a vowel plus velarized [ɫ], or as syllabic velarized /l/ - [ɫ]:

Vivienne:	[¹ bɪg·'wi·w]	"big wheel"
John:	[¹ p ^h əʊɫ]	"Paul"
Elaine:	[¹ dAr ^t]	"doll."
Jackie:	[¹ 2aŋ·kɫs]	"uncle's"

From this material it is possible to extract and classify the following vocoid glides:

a) [öy] or [əɔ]. In word-final positions this may be said to be the expression of various /¹y+l/ sequences: thus /e/+ /l/ in "uncle", "little"; /u/+ /l/ in "full", "pull"; /uw/+ /l/ in "fool", "pool"; /o:/ + /l/ in "Paul", "call". The same vowel occurs in a number of words with no association with /l/ - "fourth", "short", "sauce", and specific Popular London variants of "God", "off", "gone",

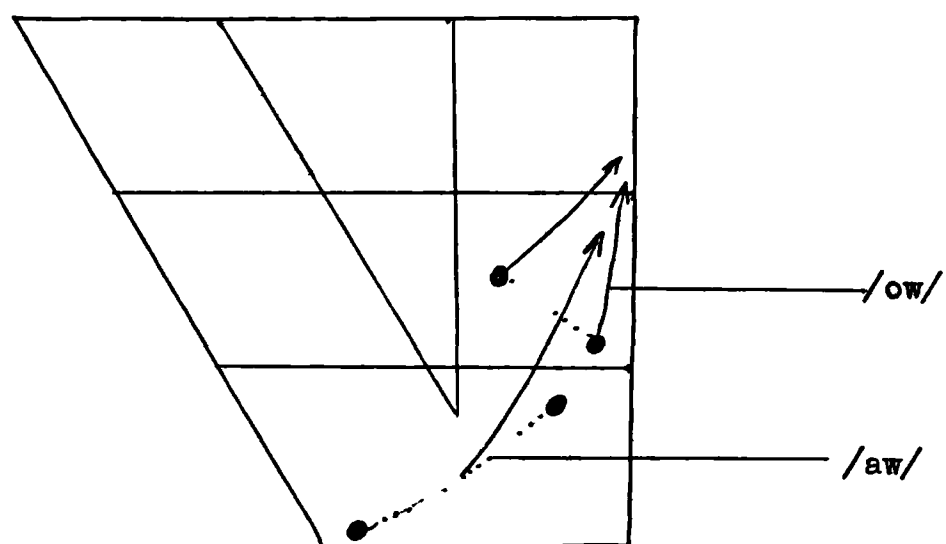
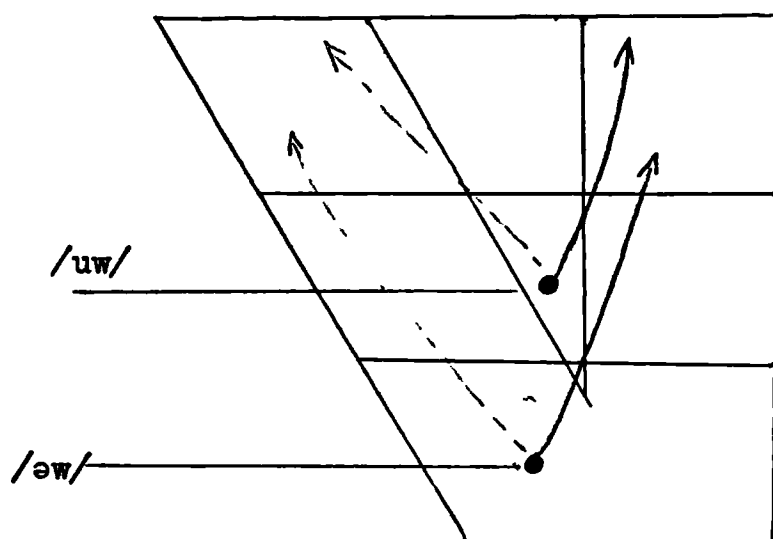
"cloth". The glide has, then, a real claim to phonemic status as the retracting vowel /ow/. /ow/ is contrasted with /o:/ in minimal pairs, not only in open word-final contexts, as in "poor - pull", "four - full", but also in closed syllables, as in "bored" /bo:d/ - "board", "bald" "bawled" /bowd/, and "yourn" /jo:n/ - "yawn" /jown/.

A further consideration in support of the phonemic status of /ow/ is that it retains its distinctive phonetic quality when followed by /l/, so that it cannot be regarded as a special form produced by the coalescence of a vowel and vocoidal /l/. Within a word there may be contrast of the sequences /ul/ and /owl/, as in "Paula" /powlə/ - "puller" /pulə/. Erecting this phoneme makes it possible to explain presence or absence of contoidal /l/ without recourse to conventions of juncture:

John:	['p ^h əʊt̪]	/ 'powl+ /	"Paul."
David Gr:	[ɪ 'sxʊo]	/ i 'skow+ /	"in school."
Teresa:	[,ʊt̪ə 'tʰæ.ɪm]	ʌ ,owlə 'taɪm /	"all the time"
David Gr:	['p ^h ɪ?ə 'bɔwA2]	/ 'pik-ə 'bowap+ /	"pick the ball up."

b) A second glide, with a variety of starting-points [a], [A], [ɔ̃], [ɔ̃], but all moving to the back half-close region, may be said to express sequences of /ew/ + /l/ - "roller", "coal", "goalie" - of /o/ + /l/ - "doll" - and possibly also /a/ + /l/, as in:

Figures 4A and 4B. Retracting Vowels



Nicholas(5,7): ['bʌb] "bulb"

It is possible to support the establishment of a phoneme /aw/, of which these glides are realizations. In word-final open syllables there would then be minimal pairs contrasting /aw/ with /ow/, /əw/ and /o:/. - "bowl" /baw/; "ball" /bow/; "bow" /bəw/; /"bore" /bo:/. These contrasts would of course obtain if a notation were employed expressing the glide as /ol/ or /əwl/, with the convention that before consonants, /-/ or /+/, the sequence is a vocoid glide, and in other positions - that is, before vowels - /l/ has contoidal realization. Such an arrangement would present difficulties when we came to consider the glide in the context of stressed syllables before medial /l/. In this position /aw/ is in contrast with both /o/ and /əw/, as in "holey" (full of holes) /(h)awli:/; "holy" /(h)əwli:/; "holly" /(h)oli:/. The presence of this contrast was tested in the children's speech by asking them to recite a poem which made use of /əw/ and /aw/ in the rhyme-scheme:

There once was a goalie called Rowley
Who ate all his food very slowly.
He soon grew so stout
That people would shout
'There goes the roly-poly goalie"

In reciting a poem like this there would be some pressure on the children from acquired rhyming habits either to pronounce "slowly" with /aw/, or "goalie" with /əw/. That

It might be argued that this vowel could be expressed in words such as "roller", "goalie" by /ol/ or /ewl/, with the convention that before a consonant these sequences have vocoidal realization. A second /l/ would be the consonant in /'rolle/ or /'rewle/, /'gollij/ or /'gewllij/. However, medial doubled /l/ is used to express extended juncture in certain utterances of Nursery children and even of 9-year olds:

This necessitates the convention that a second /l/ in this position does not have the same effect on the preceding /V + l/ sequence as other consonants, which clearly rules out the convention proposed above.

(1) [ɪ̥, ɪ̥] realization of /i/ + /l/ "kill, hill"
/ɪ̥/ + /l/ "wheel, peel"
/i:/ + /l/ "real"

(2) [ɛ̥, ɛ̥] realization of /e/ + /l/ "well, else"
//e:/ + /l/ "girl, world"

Sean: [gɔ2ə'wəʊɪn,ðɛ] "got a whale in there"

However further examination of the behaviour of these diphthongal vocoids reveals that there are no substantial grounds for the establishment of further phonemes in place of the sequences /ɪl/, /el/, /æɪ/, /a:l/, /oɪl/ and the rarer /æɪl/, /aɪl/. Unlike /ow/ and /aw/ which may be in contrastive opposition to other phonemes before /l/, there is no contrast before medial /l/ of /e/ and [ɛr], of /i/ and [ɪw] and so on. In open syllables the glides may be in contrastive opposition to other vowels, as in "heel - here"; "well - where"; "sale - say" and so on. These contrasts operate only before consonants and before /+/, /-/, and it is these very contexts which can be covered effectively by a rule of juncture governing syllable-final /l/. The rule may be stated: where post-vocalic /l/ is followed by another vowel in close juncture, /l/ is a non-velarized lateral contoid [l]; where /l/ is followed by /+/, /-/ or a consonant other than /l/, it is realized as part of a vocoid glide to back half-close, which may or may not be followed by the velarized lateral [ɫ]. With this rule the above utterances may be given the following phonemic descriptions:

Sean:	/ 'fel-, ɪndə 'wɔwte+ /	"fell in the water."
Terry:	/ 'pɪj- 'el- 'ɪj+ /	"P - L - E."
Vivienne:	/ -ɪs 'gel- end- /	"this girl and..."

Janice:	/ 'wa:l-əjwəz-'təʊkɪn/	"while they was talking"
Debra G:	/ 'məʊba:l-həʊm/	"Mobile home"
Vivienne:	/ 'kɪldðəronj'ləjdɪ+/	"killed the wrong lady."
Sean:	/ gotə'wæl-ɪn,ðeɪ+/	"got a whale in there."

v Homogeneity of the Class of Retracting Vowels.

In to the class of Retracting Vowels go the two phonemes /ow/ and /aw/ established in the preceding discussion, together with the two vowels that remain to be considered, /uw/ and /əw/. This class of vowels is perhaps less homogeneous than the long ^{or} Fronting Vowels. /uw/ and /əw/ for instance differ from /ow/ and /aw/ in that they may appear before other vowels within a word, as in "doing" /'duwɪn/, "going" /'gəwɪn /, while /ow/ and /aw/ may not. Forms such as /'fəwɪn/ for "falling" or /'rəwɪn/ for "rolling" are not found in mature speech. /ow/ and /aw/ may occur in close juncture with a subsequent vowel across a word-boundary:

David Gr:	[ðeɪ'ɹəʊ'ɑ:d]	/ðeɪ'row'a:d+/	"they're all hard."
Sean:	['geɪnɪŋsəm'kʰəʊt]	/ 'getɪnɪsəm'kawəʊt+/	"getting some coal out."

vi /uw/ and /əw/

In descriptions of some types of English the sound in "do", "food" is described as a glide to a close back end-point, or as a long back, close rounded monophthong. In this type of

London speech, however, - and it may be a feature of most types of speech with back-vocoid realizations of final /l/ - this vowel is a glide from a central position between half-open and half-close to a close position that is no further retracted than [ü] and may be considerably fronted. When fronted it is also rounded, giving an end-point at [y̥] or [y]; when retracted it may have unrounded allophones [ɤ:], [əɯ]. It seems likely that this fronting of /uw/ is due to the presence of fully back, half-close or closer end-points of the glides discussed above (4.1 iv) - in particular /ow/. The movement of /ow/ from centralized to back and from half-open to above half-close mirrors the movement of the front of the tongue for /ij/ more closely than does /uw/.

On phonetic grounds there is perhaps less justification for considering /əw/ as a retracting glide than for /ow/, /aw/ or /uw/. Allophones of this vowel may consist of a slight glide to no further than central or back of central half-close, and monophthongs are found both before vowels and in other positions:

John:	[,gʊs:ən'ɛvə,pʌʔ ^h]	/,grəwən'əwvə,rət/
Vivienne:		"growing over it"
Vivienne:	[,rəwəɪ'lɪtəw,flæts]	/'rəwəɪ'lɪtəw,flæts/
		"row of little flats"
Teresa:	[də'də:]	/da'dəw+/"Don't know."

However, among younger speakers it will be seen that realizations with more retracted and more frequently rounded endpoints are found among younger speakers to a greater degree than among 9-year old speakers (cf. IV, 3.2 xv). The features of retraction and, to a lesser extent, rounding, appear to be distinctive in oppositions involving the vowel *ɜ*, more so than with /*æ*:/, for instance.

There is also the distributional feature by which /*əw*/ may occur before other vowels across word-boundaries, but is never found before linking /*r*/. This distinguishes the vowel from the Long Vowels including /*æ*:/, and classes it with /*ow*/, /*uw*/ and /*aw*/. If there is any linking segment between /*əw*/ and a subsequent vowel it is a non-phonemic rounded labial segment:

Jenny:	[g _s •ʊ'on]	/gəw'on/	"Go on..."
John:	[,fɹʊɪt]	/,frewit/	"throw it"

4.2 Weakening of Vowels

All the long, fronting and retracting vowels may be weakened under certain conditions, when their phonetic form is reduced from the described phonemic norm in terms of length or of extent of glide. Weakening takes place in both stressed and unstressed syllables, usually within an utterance rather than utterance-finally, and more frequently in rapid speech

than in slow, careful delivery. There are also 'weak' vowels /ɪ/, /ə/, /ʊ/ and in certain contexts /ɪj/, which can replace all other vowels in non-prominent, unstressed syllables.

11 Weakened Forms

Vowels may be grouped according to the direction in which they weaken, as follows:

a) /i:/, /ɪj/, /ɪ/.

Both /i:/ and /ɪj/ may weaken to /ɪ/ if they lose the features of length or glide respectively:

John: [ˈnɪðəˈʃɔps] /ˈnɪðəˈʃɒps/ "near the shops"

Russell: [mɪˈbɒdə] /mɪˈbɒdə/ "my body"

John: [ˈkɪpsəmˈfaɪtəmɪ] /ˈkɪpsəmˈfaɪtəmɪ/ "keeps on fighting me"

b) /e:/ and /e/.

/e:/ may weaken to /e/ when it loses its distinctive length:

Jeanette: [weɪˈweɪə] /weɪˈweɪə/ "Where we are"

Clifford: [ˈtʃeɪz] /ˈtʃeɪz/ "chairs,"

c) /æ:/, /æj/, /æ/.

/æ:/ frequently weakens to the short vowel /æ/. /æj/ may also lose its distinctive glide and length, but this is mostly before other vowels where /æ/ may not occur, so that the resulting vocoid must be regarded as a weakened allophone of /æj/:

Jackie: [dæn'steɪz] /dæn'steɪz/ "downstairs"
 Elaine: [ˌeɪˈneɪs] /ˌeɪˈneɪs/ "Our house"
 Ross: [ˌnæʒuˈkæmɪŋ] /ˌnæʒuˈkæmɪŋ/ "and they were coming"
 Jenny: [ˈwɛnðəz-ɪtˈtɒkɪŋ] /ˈwɛnðəz-ɪtˈtɒkɪŋ/ "When they was talking"

In the expression "ain't" /æj/ is frequently weakened to /ə/, and also to /a/:

Tony: [wɪˈænjʊtˌnəθɪŋ] /wɪˈænjʊtˌnəθɪŋ/ "We ain't got nothing."
 Diane: [ænjʊtˌwən] /ænjʊtˌwən/ "ain't got one."

d) /ə:/ and /ə/

/ə:/ is frequently weakened to /ə/ when it loses its distinctive length. /əw/ is less systematic in its reduction, reducing sometimes to /ə/ but in some expressions, such as "don't know", reducing to /a/:

Clifford: [ˌɔːrɪzˈfaɪwɜːks] /ˌɔːrɪzˈfaɪwɜːks/ "All his fireworks"
 Jenny: [ˈlɒzəˈmemərɪ] /ˈlɒzəˈmemərɪ/ "lose her memory."
 Vivienne: [ˌɡenərəvəˈdɒg] /ˌɡenərəvəˈdɒg/ "going to have a dog."
 Diane: [ˌɔːˈnɒtˌnə] /ˌɔːˈnɒtˌnə/ "I don't know."
 Jackie: [ˌdɒtˌnə] /ˌdɒtˌnə/ "don't know."

e) /aɪ/ and /a:/

/aɪ/ and /a:/ are rarely weakened to another phoneme, there being no short vowel in the back open region. Their

weakened allophones reduce the /aɪ/-/a:/ opposition:

David Gr: [ʃɪA,a·'skim] /ʃəlaɪa:ts'kim+/ "Shall I ask
him?"

f) /o:/ and /o/.

Like the other long vowels, /o:/ may weaken to its corresponding short item /o/:

Diane: [θɪɪ̯ɔ̯'fɪ] /θɪo'fe:+/ "three or four."

Clifford: [s'fɔ̯,ðeɪn] /s'fo,ðen+/ "(I) was four then."

g) /ow/, /uw/, /u/.

/ow/ and /uw/ may lose their distinctive glide and length, when both weaken to, /u/:

FDiāap: ['wɔ̯?jɪ,ævin^h] /'wot'ju,ævin/ "What you having?"

Phālip: ['mɛt^su,siŋz] /'metu,siŋz / "metal things"

iii Weak Forms

The weakened forms presented here may occur in stressed as well as unstressed positions. In unstressed syllables the same vowels may be replaced by weak forms - one of the three short vowels /ɪ/, /ə/ or /ʊ/, and in certain circumstances the fronting vowel /iɪ/. Vowels which weaken to /ɪ/ are replaced by the same vowel in unstressed positions; /i/ is occasionally found in certain words replacing /e/ - "get", for example. /ʊ/ may replace /uw/ and /ow/, and also /o/, in certain common words such as "was" /wʊz/, "what" /wʊt/. The majority of vowels, however, are replaced in

unstressed, non-prominent syllables by /ə/.

It is suggested that there is a qualitative difference between weakened and weak vowels, as far as the linguistic mechanism is concerned. 'Weakened' allophones of vowels are the result of rapid articulation, or of a vowel's non-prominent position in the utterance, as a result of which the speaker, aiming at producing the features of a phoneme, is unable to do so. A 'weak' vowel, on the other hand, is the result of a substitution, in which the speaker has brought into operation a transformation converting the original 'full-value' phoneme into a weak form more appropriate with a non-prominent, unstressed position in the utterance. A word may have both distinctive weakened and weak forms. "My", for example, has the weakened form [mä·], in both stressed and unstressed syllables, and the weak form /mi/ or /miɹ/. Stressed /mi/ or /miɹ/ is never heard for the possessive pronoun. There are many other weak-transformations, such as that which turns final /,dæj/ in "yesterday", "Sunday", into /di/ or /diɹ/, and that which converts final /əw/ in "barrow", "yellow" into /ə/. Instances of this phenomenon will be touched on in the ensuing discussion, in particular in Chapter V (3.1).

4.3 Description of Vowels in 9-year old Speech

1 /i/

Stressed in: "Smith" /'smɪf/, "bit" /'bɪt/, "Skipping" /'skɪpɪn/

Unstressed in: "bushes" /'bʊʃɪz/ "my" /mi/ "country" /'kʌnttri/

/i/ is between front and central and between close and half-close, nearer perhaps to centralized [e] than to [ɪ]. The lips are spread, but only loosely; /i/ is not normally a tense vowel. It is laxer and shorter than both /ɪj/ and /i:/. Variants may be more centralized than [ɪ] or more open. [ɪ], [i̯], [ɪ̥] are found in both stressed and unstressed syllables, but the open variants [e̞], [ɛ̞] occur predominantly in final open unstressed syllables, where /e/ may not occur;

John:	[lʌʔə'pɔ, k'ɪʔɛʔɛ]	/lətə'ro,kɪts+/	"lot of rockets."
Jackie:	[t'ɛdɪ, beɪ]	/t'ɛdɪ, beɪ+/	"Teddy Bear."
Clifford:	[ɪ'lɪʔɪʔ]	/aɪ'lɪtɪt/	"I lit it"
Russell:	[ɪʃɪlɪn]	/ɪʃɪlɪn+/	"Shilling."
Tony:	[ɪʒənʒəu, ɛɪʔ]	/ɪʒənʒəu, ɛɪ+/	"January."
Ross:	[,əʔɛʔɛʔ]	/,ətɪt+/	"... at it."

In stressed and unstressed syllables before /+/ the vowel is commonly lengthened and glided, most noticeably in closed syllables terminated by a voiced lenis plosive

or by a nasal, but also before fortis consonants:

Tony: [y̥, æv'bi̥.n] /wu, əjv'bin+/ "Well I've been."

Teresa: [¹fæɪvɪz²'dʒɪ̥əŋ²kˣ] /¹fæjvrit'drɪŋk+/ "favourite
drink."

Diane: [A'dɪɪdˣ] /əj'dɪd+/ "I did."

David G1: [¹ɹɔs¹mɪ̥tˣfθ] /¹ɹɔs'smɪθ+/ "Ross Smith,"

David Gr: [¹fʊ²bɔ, pʰɪ.²tʃ] /¹fʊpbɔw, pɪtʃ+/ "football pitch."

Jackie: [¹lɛ²ɔf¹f.ɔkˣɪ.²s] /¹lɛtɔf¹frɔkɪts+/

"Let off rockets."

/ɪ/ may be shortened or even elided before other vowels

when there is no open juncture:

Vivienne: [ʃɪ, æɪn²t²gɔtˣnɔw] /ʃɪæjnt-¹gotnɔw / "She ain't got
no..."

" : [¹ʃ.æɪtˣtɔ'gɔw] /ʃɪ'ættɔ'gɔw / "she had to go "

Elaine: [wɪ, æv¹fɹɪɪ] /wɪæv¹frɪj/ "We have three"

Labialization takes place in the vicinity of /w/ and, perhaps
rather surprisingly, of /b/, which does not have this
effect on other vowels:

Diane: [¹bɪ̥tˣh] /¹bit+/ "bit."

Elaine: [¹wɪ̥tˣf] /+¹wɪpɪf+/ "(a) width."

Clifford: [wɪ, ædɔ.¹kɪ̥vʊˣs.] /wɪ, ædɔw¹klɔws+/ "We had all clothes."

Russell: [ə¹bɪ̥g, fɪ̥.ɛ] /ə¹big, fɪjɛ+/ "a big fire."

/ɪ/ and /ɪj/ alternate freely in the final open syllables
of many polysyllabic words - "Nearly", for example:

Diane: ['nɪ:lɪ·,nAən] /'ni:li,nəjn+/ "nearly nine."
 Jackie: ['nɪ·liɪ'ðʊwæɪz] /'ni:liɪ'owwæɪz/ "nearly always"
 Philip: ['ni:liɪ'eɪə] /'ni:li'eve/ "nearly ever"

The two forms alternate also in words such as "he", "she", "me", "my" - /(h)ɪ,(h)ɪj/, /ʃɪ, ʃɪj/, /mi, miɪj/. Possibly /ɪj/ tends to occur more in stressed positions and before /+/ and /-/, while /ɪ/ is found more in unstressed syllables and before vowels, but this is by no means a universal rule. /ɪ/ is sometimes found in words which normally have /ɪj/, even in stressed syllables:

John: [wð'kɛʔəŋ'geʔən] /wɪ'kitəŋ'getən/ "We keep on getting..."

/ɪ/ is sometimes found for /e/:

Philip: ['wɪð·,ɛ] /'wɪð,ðɪm+/ "with them."

Diane: ['wɛnʔdɒ·mɪ'Aɪ·ʔtɛ·] /'wɪntdæ:mi'a:nts+/ "went down my aunts'."

Debra G: [ɛɪv'nɪvə,bɪn] /əɪv'nɪvə,bɪn/ "I've never been"
 (8,0)

Debra C: ['jɛs·tə,dɛɪ] /'jɪsɪstə,dæɪ/ "yesterday."
 (7,5)

/u/ and /uw/ may be replaced by /ɪ/ after the palatal /j/, especially in "you":

Clifford: [jɛ,nAɪ] /jɪ,nəw+/ "you know."

Jackie: [jɛgeʔə'brɪg'tɛdɛɪ,bɛɪ] /jɪgetə'brɪg'tedi,bɛɪ+/ "You get a big Teddy Bear."

This may be a case of /u/ and /uw/ being replaced by the weak form /ɪ/ rather than the weak form /ə/, due to the influence of the palatal. /ɪ/ and /ə/ are in free variation in unstressed syllables in many words, especially in word-final closed syllables - as in "favourite":

Jenny: [ˈfærvuɪ?] /ˈfæjvrɪt/

Diane: [ˈfæɪvə?] /ˈfæjvrət/

But it is not uncommon to find vowels of an intermediate quality, centralized from [ɪ] and closer than [ə] -

[ɛ] or [ɜ̃]. They are classified for convenience as /ɪ/:

Elaine: [ˈmɑːsɪstɜ̃kɪm] /ˈmɑːsɪstɪˈkɪm-/ "my sister Kim,"

Jeanette [ʒrˈnɛ?] /dʒiˈnet+/ "Jeanette."

Russell [tɜ̃ːˌɪtˈeɪgɛtsəmˈwʊd] /tɪˈɪtəˈgetsemˈwʊd+/
"to, er, to get some wood."

ii /ɪj/

Stressed: "machine" /məˈʃiːn/ "Teresa" /ˈtriːzə/ "read" /ˈriːd/

Unstressed: "noisy" /ˈnoɪziː/ "he's", "his" /ɪz/ "the end"
/ðɪˈend/

/ɪj/ is normally a glide towards a position closer and more front than /ɪ/, though this position is not always reached. At the end of the glide the tongue is relatively tense, the lips are spread. The starting-point of the glide varies. Under conditions favourable to lengthening and gliding of vowels - stressed syllables or syllables before /+/ - it

may be around half-open central [ə]. More open and fronted starting-points are found in utterance-final syllables - [ɜ], [æ] - while closer and more fronted starting-points are associated with stressed and unstressed syllables within an utterance - [ɪ], [ē]:

Clifford:	[ɪ'2ə.ɪlæy]	/+ɪ'ɪjlæj+/	"Elaine."
John:	[dɜ'nɜɪ.s]	/dɜ'nɪjs+/	"Denise."
Diane:	[mæ'fæɪdʰ]	/mæ'fɪjd+/	"machine."
Kathleen:	[æmri'pʰɛʔɛ]	/æmɪj,pets/	"How many pets.."
David Gr:	[ɪnrɪ'ɔlə,tɹɛɪz]	/ɪnɪj'ɔlə,tɹɪjz/	"in the hollow trees"

/ɪj/ may have a rounded starting-point in contiguity with certain consonants, /w/ in particular, but also occasionally /b/, /ð/:

Jenny:	[,kwɪɪnz'pʰælɪs]	/,kwɪjnz-'pælɪs/	"Queen's palace"
Tony:	[ɪ'wɛɪwɛn'vɛvə]	/ɪ'wɪjwen'əwvə /	"we went over"
Jeanette:	[ɪ'bæ:ʔə'wɛɪkʰ]	/ɪ'bæ:tə'wɪjk+/	"about a week."
Vivienne:	[ɪ'bɛɪɪ.ʋ.ɛ]	/ɪ'bɪjtʊwɜ/	"Beatles"
David Gl:	[ɪ'bɛɪnz]	/ɪ'bɪjnz+/	"beans."
Elaine:	[ðɛɪ'ɔs.pɪʔ,ɔ]	/ðɪj'ɔsspɪtəw+/	"the hospital."

Monophthongal variants of /ɪj/ are rare, but must be allowed to exist in certain contexts where /ɪ/ may not occur, such as in utterance-final stressed open syllables. Longer unglided allophones can also be identified as /ɪj/ if they are in contexts where /ɪ:/ is not likely to occur:

John: [ˈɪfəðəˈtʰuːh] /ˈɒfəðəˈtriːj+/ "off of the tree."

Clifford: [əɪ̯·ʌˈæɪɪ?] /sɪjəjˈæɪɪt/ "See, I had it"

The alternation of /ɪj/ and /i/ in some contexts was mentioned in the previous section. /ɪj/ can be found in Cockney in many places where Standard English would use a short vowel corresponding to /i/:

Teresa: [ˈmɛ·ɪˌziːz] /ˈmɛwziːz/ "Moses"

Clifford: [ˈɪəɹɪzˈfɛrweɪks] /+ˈɒwɪzˈfɛjweks/

"All his fireworks"

111 /i:/

Stressed: "near" /ˈniː/ "really" /ˈriːliːj/ "here", "hear"
/ˈ(h)iː/

/i:/ has long unglided allophones which are very close in tongue-position to /i/, becoming tenser and slightly closer in stressed and prominent syllables. Other allophones take the form of a glide from this starting-point towards the central or front of central area - [ɪə], [ɪɛ], [pə], [ɜɜ].

The diphthongal variant is found most frequently in open syllables, particularly before /+/ and /-/, while unglided allophones are encountered most often in closed syllables within the utterance. A third type of allophone, that seems to be associated with informal and vigorous dialectal styles of speech, is a two-directional glide moving from the region

of [ɪ] to close front, and thence to half-open to open front of central - [ɪjə], [ɪjə̃], [ɪjə̌]. This triphthong is not found in recordings made by older children, who were possibly conscious of a degree of formality in the recording situation. Examples, can, however, be drawn from the recorded speech of younger children:

Clifford:	[,ɪm:A'ɜ:dɹam]	/,ɪmɑj'i:dɹam/	"in my ear-drum"
Diane:	[ˈni:lɪ·,nʌ̃n]	/ˈni:li,najn+/	"nearly nine."
Philip:	[βəʔtʰ'hɪə]	/bət-'hi:-/	"but here,"
Kathleen	[ˈɹæbɪʔsən·'di:əs]	/ˈræbɪtsən-'di:s+/	"rabbits and deers."
John:	[ˈlɑ:ʃɜ̃]	/ˈlɑ:ʃi:/	"last year"
Nicholas: (5,7)	[,əʊv'ʊfjə̃]	/,əʊv'ri:/	"over here."
Sean (5,11)	[,fɹəm'ɪjə̃]	/,fɹom'i:+/	"from here."

/i:/ and /ɪ/ are distinguished by length alone in some contexts, and if /i:/ loses its length the short vowel must be acknowledged. Similarly if /ɪ/ is lengthened in a situation where short allophones of /ɪ/ are customary - for example, before medial /r/ - then the vocoid in question must be said to have acquired the features of /i:/.

John:	[nɪdə'fæʔtɜ̃z]	/nɪdə'fætrɪz/	"near the factories"
Russell:	[mə'tɪ'ɪ;vɪʔv]	/mə'ti:rijow/	"material"
Russell:	[mə'tɪ'ɜ̃vɪw]	/mə'tɪrɪl+/	"material"
Jenny:	[,glɑ:s'mɪ·ɹə̃]	/,glɑ:s'mi:rə+/	"glass mirror."

/i:/ may result from the coalescence of other vowels in the front half-close to close area; /i/ + /e/, for example, or /ij/ + /e/:

Philip: [wɪ^əzfe'daʔp] /wɪ:zfe'dap/ "We was fed up"

Jeanette: [ˈwɛnʔt'sɪ:pikuʃ] /ˈwent'si:pikuʃ/

"went to see her because she..."

There is an important difference, however, between /i:/ and the disyllabic sequence /ie/:

Jeanette: [ɔstɹæjliə] /o'stræjliə-/ "Australia"

Ross: [ˈdæ.nə'mɒniə] /ˈdæ:nðə'moniə+/ "down the 'Monier"

In the word "year" /i:/ seems consistently to have more than usually centralized allophones. In places the alternative pronunciation /'je:/ is found:

David G1 [ˈeɪt,jɪ:z'aɪd] /'æjt,jɪ:z'aɪd+/ "eight years old."

Ross: [fɹə'ji:] /fɹə'ji:/ "for a year"

Tony S: [ˈlɑ:s-,jɛə] /ˈlɑ:s-,jɛə/ "last year"
(8,1)

This vowel rarely occurs before another vowel even in open juncture. Instead, it is usually linked to a succeeding vocalic phoneme by ^m/r/:

Diane: [t^səf^xɪ.ə'ɹaʔp^ʃ] /təki:'rap+/ "to clear up."

Vivienne: [ˈɪ:ɹenɪj,wən] /ˈi:renɪj,wən+/ "hear anyone."

Elaine: [ˈdɪrən'ɪ:ɹɪm] /ˈdɪtən'ɪ:ɹɪm/ "didn't hear him."

iv /i/, /i:/, /ij/ + /l/

Before initial and medial /l/ all three vowels may occur, and remain distinctive:

Russell:	[mɪ'leɪz]	/mɪ'leɪz/	"my legs"
Jenny:	[ˈsɪləɪ]	/ˈsɪlɪj-/	"silly,"
Tony:	[ˌɹɪ·ləɪ]	/ˌrɪ:lɪj/	"really"
Ross:	[ˈfɪʃɪm·,ɹɪlənseɪ]	/ˈfɪʃɪm,ɹɪlənseɪ/	"fishing reel and some ..."

However, when /l/ is final and not immediately followed by a vowel, only the sequence /ɪl/ is possible. This is most commonly realized as a vocoid glide from [ɪ],[ɪ̥] towards back close - [ʊ],[ʊ̥],[ɯ]:

Ross:	[ˈhæɹʊdˈhɪɹ]	/ˈhæɹʊdˈhɪl+/	"Harold Hill."
Teresa:	[ˈkɪlˈdɛ·sɛɪf]	/ˈkɪlˈdɛ:sɛɪf+/	"killed herself."
Vivienne:	[ˈkɪl·rɪm,wɪls]	/ˈkɪl-rɪm,wɪls+/	"Catherine Wheels."
Terry: (7,7)	[ˈwɒɪzɪ·vɪɹ,næɪ]	/ˈwɒ-ɪzɪˈrɪl,næɪm+/	"What is your real name?"

When /ɪl/ is followed by a consonant the starting-point of the glide may be even more centralized: the sequence may be realized at times as a back of central, close, unrounded monophthong:

Jackie:	[ðəˈtʃɪldrən]	/ðəˈtʃɪldrən/	"the children"
Russell:	[təˈbɪldɪt]	/təˈbɪldɪt/	"to build it"
Kathleen:	[ˈtʃɪldrən]	/ˈtʃɪldrən/	"children"
Vivienne:	[ˈkɪldðəɹɒŋˈlæɪdɪɹ]	/ˈkɪldðəɹɒŋˈlæɪdɪj+/	"killed the wrong lady"

The length of this vocoid is not significant. Longer glides are probably conditioned by their position before /-/ or /+/:

Vivienne: [ˈbɪg·ˈwɪ·u] /ˈbig-ˈwɪl+/ "Big Wheel."

Teresa: [ˌɪpˈhɒnɪsˈɪ·u] /ˌapɒnɪsˈɪl+/ "up on this hill,"

v /e/

Stressed: "eleven" /ɪjˈleɪvən/ "anything" /ˈenɪfɪŋk/ "weekend"
/wɪjˈkɛnd/ "went" /ˈwɛnt/

Unstressed: "next door" /nɛksˈdɔː/ "fed up" /fɛˈdʌp/.

/e/ is an unrounded , front but not fully fronted vowel, in the half-open region or slightly higher. Neither lips nor tongue are particularly tense in the articulation of the vowel. Fully stressed allophones are, however, more tense and more fronted than those in unstressed positions:

Tony: [dʒəˈmɛmbəwɛnɪjəˈwɛnɪ] /dʒəˈmɛmbəwɛnɪjəˈwɛnt/

"Do you remember when you went...?"

Elaine: [dɔːnɪˈgɛt vɛrɪˈmeni] /dɔːnɪˈgɛt vɛrɪˈmeni/

"don't get very many"

Elaine: [ˌɪsɛˈdʌkən] /ˌɪjsɛˈdʌkən/ "he said 'duck' and.!"

In conditions favourable to lengthening and gliding are found glides from [ɛ] to close front – though this glide is never very pronounced, and should perhaps be described as an 'off-glide'. A similar off-glide to central position is probably

more common than the closing off-glide:

Russell:	[¹ ʊɛ̃ ¹ d]	/ ¹ red+/	"red."
Teresa:	[¹ Af ¹ gɛ ² ,ðɛ̃ ¹ m]	/ ¹ ɑjfe ¹ get,ðem+/	"I forget them."
Jenny	[ənɪ ¹ p ^h ɛ̃ ¹ sɪ]	/ənɪ ¹ pets+/	"any pets?"
Jackie	[¹ wānə ¹ ðɛ̃ ¹ m]	/ ¹ wanə ¹ ðem+/	"one of them."
Clifford	[¹ p ^h ʊ ² ɛ̃ ¹ mə ¹ p ^h ɛ̃ ¹ d]	/ ¹ putɪmə ¹ bed+/	"put him to bed."

There may be closer realizations of this vowel in certain words, as close as [ɛ̃] or closer. However, for the purposes of classification allophones ^{as} closer than half-close are regarded as instances of /i/. These close allophones of /e/ seem to occur particularly frequently in the word "get":

Ross:	[¹ k ^x ɛ̃ ² . ¹ misɪn.ə ¹ bɔ̃]	/ ¹ kəp ¹ misɪnnə ¹ bow+/	"kept missing the ball."
Philip	[t ⁵ ə,gɛ̃ ² ɪwɪm]	/tə,gæt ¹ əwɪm/	"to get home."
Teresa	[¹ gɛ̃ ² ɪn ¹ ɔ̃rd ²]	/ ¹ gætɪn ¹ ɔ̃wɪd+/	"getting old."

Even in stressed position /e/ may be centralized: this centralization can be accompanied by slight lip-rounding, which is more pronounced in the presence of /w/:

Kathleen:	[mɛ̃rsə ¹ nɛ̃ ² h]	/mɛ̃jsɛ̃net+/	"maisonette."
Diane:	[¹ wɛ̃n ² t ⁵ ə ¹ gɛ̃ ² ɪm]	/ ¹ wenttə ¹ getɪm/	"went to get him."
Teresa:	[¹ wɛ̃nt ⁵ ə ¹ fɛ̃ ¹ ɔ̃n ² ts]	/ ¹ wentə ¹ fra:nts+/	"went to France."

/ə/ may occasionally replace /e/ after /w/ - a case of weakening - in both stressed and unstressed positions. In one utterance, the features of /w/ and /ə/ conflate into one

centralized, rounded vocoid [ə]:

John: ['tʃənɪ'waɪn] /'twɛnɪ'wan+/ "twenty-one."

Vivienne: ['wɛm:ɪ'məʊv] /'wɛmmɪ'muʊv/ 2 "when we move"

Teresa: [ˌɛnzə'beɪf,dæɪ] /ˌˌwɛnzə'beɪf,dæɪ/ "When's your birthday?"

/e/ does not normally appear immediately before /+/, though it may do so if a final consonant is not articulated:

Clifford: [ˈæːmənɪ'gɛ] /'æ:mənɪ'ge+/ "How many did you get?"

vi /e:/

Stressed: "chairs" /ˈtʃeɪz/ "there", "they're" /'ðe:/ "aero-plane" /'e:replæn/ "upstairs" /ap'steɪz/

Unstressed: "upstairs" /ˈapsteɪz/ "there are" /ðe:'rɑ:/.

As with /ɪ:/, both glided and unglided variants of this vowel are found. The position of the monophthong and the starting-point of the glide are about the same as /e/. Monophthongs occur most frequently in closed, non-final syllables, while glides, which are from [ɛ] or [ɛ̃] towards central or front of central, half-open to open, are found most often in open syllables before /+/:

Ross: [ðeː-ˈɑ:ˈsevn] /+ðe:-ˈɑ:ˈsevn/ "There are seven"

Russell: [ˈɛbstɛɪz] /'absteɪz/ "upstairs"

Vivienne: [ˈmɛːrɪˈɒpkɪns] /'me:riˈɒpkɪns+/ "Mary Hopkins."

Philip: [ʊvə'ðe:] /əvə'ðe:+/ "over there."
 Jeanette: [ðe:'lɪvɪn,næ] /ðe:'lɪvɪn,næ:+/ "They're living there."
 Clifford: [ˈæɪn2nəs] /ˈæɪntne:+/ "ain't there?"

/e:/ is distinguished from /e/ by the feature of length, but since /e/ never occurs in open final syllables (except in the case of omission of an utterance-final consonant - see preceding section) this is one place where the feature of length need not be maintained; short allophones of /e:/ are found in this position.

John: [ˌʊvəðə'bəʔ,dɛ] /ˌəvəðə'bæt,dɛ:+/ "over the back there."
 Jeanette: [weɪkˈæg'gəʊðɛ] /wɪjkæg'gəwðe:-/ "we could go there,"
 Vivienne: [ˌstæˌndɪˌnɪŋˌe] /ˌstændɪnɪnðe:+/ "standing in there."

When these short vocoids are found in closed syllables, where /e/ may occur, they must be considered as instances of /e:/ weakening to /e/:

Clifford: [ˈtʃɛz] /ˈtʃez-/ "chairs,"
 Vivienne: [ˈfeɪhɛə] /ˈfeɪhe:+/ "fair hair."
 Jackie: [dænˈstɛz] /dænˈstez/ "downstairs"

/e:/ may be replaced by /ə:/, as in

Tony: [ˈtænəˌræpðɛ:] /ˈtænəˌræpðe:+/ "tanner up there."

This seems to be the rule rather than the exception in the case of "yes" or "yeah" - /ˈjɛ:/, Among the forms recorded for

this item are: [ʔjæ, ʔjɛ̃, ʔjɛ̃̃, ʔjæ, ʔjɛ̃, ʔjɛ̃]

Two-directional glides in /e:/ are not recorded in 9-year old speech, though they may be found in younger subjects' recordings:

Nicholas: [ʔsɛɪjæʔʔɛ̃jɛ] /ʔsɪj(ʔ)ætʔɛ̃:+/ "See that there?"
(5,7)

vii /e/, /e:/ + /l/

Both /e/ and /e:/ may occur before medial /l/ - "jelly" /ʔdʒɛɪlj/, "Rarely" /ʔre:ɪlj/. Before /+/, /-/ and consonants, however, the sequence /e:l/ is not possible: /el/ in these positions is a vocoid glide from front half-open or higher to back half-close or slightly lower - [ɛʏ], [ɛo], [ɛʌ]:

Ross: [ʔgɔʔʔɪsɛ̃ʌfʔbɛ̃:nʔ] /ʔgotmɪsɛ̃lʔbɛ̃:nt+/ "got myself burnt."

Elaine: [ʔtwɛ̃.ʔɪ.ʔkɔk] /ʔtwelvɛ̃ʔkɔk/ "twelve o'clock"

Jackie: [ʔðɛ̃ʔgɛ̃rʔn:ʔgɛ̃ʏ] /ʔðɛ̃ʔgɛ̃l-unnɛ̃ʔgɛ̃l-/ "the girl and the girl"

Ross: [ʔɪnɛ̃ʔwɛ̃ɔd] /ʔɪndɛ̃ʔwɛ̃ld/ "in the world"

Jenny: [wʌʔʔʔɛ̃.ʔɪsɛ̃] /wɔt-ʔɛ̃l/ "What else...?"

David G1: [wɪʔʔʔɛ̃ʌsɛ̃] /wɔtʔɛ̃l/ "What else...?"

It will be noted that in the above examples "world" and "girl" both have forms with /el/ and not with /ɛ̃:l/, a form which is not found at all in this study.

VIII /æ/

Stressed: "eat"/'kæt/"banger"/'bæŋə/"January"/'dʒænjəri/
"Grandad"/'græn,dæd/

Unstressed: "Macdonald"/mæt'donəwd/"that all?"/ðæt'əw/

/æ/ is a front vowel, unrounded and between half-open and open, though nearer to [ɛ] than to [a]. The symbol [æ] is taken to represent a vocoid quality very close to that of [ɛ], though it is suggested in this study that /æ/ is distinguished from /e/ not only by more open tongue-position, but also by a more truly front articulation and by greater tenseness in the spreading of the lips. This is particularly true of the long allophones of /æ/. Although /æ/ has some allophones which may be as long as some of the 'long' vowels, it is classified as a short vowel because these allophones occur in predictable contexts and under statable conditions.

Long and Short Allophones of /æ/

a) Before /+/, in stressed or unstressed syllables, this vowel is likely to be lengthened. It may also be glided towards a central position - [æə]- or towards a closer position, though the movement of the latter glide is not very extensive - [æ^ɪ] or [æ^ɛ]; Before nasals and lenis plosives long allophones occur almost invariably: before other consonants they are likely to occur in the same proportions as long

allophones of other short vowels:

Clifford:	[¹ bæŋ]	/ ¹ bæŋ+/	"Bang!"
Jenny:	[¹ læpɪæ.nd]	/ ¹ læpplænd+/	"Lapland."
Vivienne:	[¹ kʰæ.n]	/jə ¹ kæ.n+/	"You can!"
John:	[¹ kʰæ.ɪ]	/ ¹ kæt+/	"cat."
Diane:	[¹ la.ɪ ² ðæ.ɪ]	/ ¹ laɪk ¹ ðæt+/	"like that."

b) In a stressed syllable preceding a medial cluster of nasal + lenis plosive, it appears that /æ/ is unusually long, as in "standing", "angry", "Handbag", "kangaroo":

Jackie:	[¹ kʰæŋgə ¹ ɹæʃ]	/ ¹ kæŋgə ¹ ruw+/
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though insufficient instances have been recorded here to ascertain whether this is an invariable rule. If /æ/ precedes a single medial consonant that is word-final, in a stressed syllable, it may have a long allophone, particularly if the consonant is a nasal or a lenis plosive. This is not, however, an invariable feature:

Diane:	[¹ mæ.ŋk ² ʊ ¹ dɔ ² ktə,smɪf]	/ ¹ mæŋk ¹ ʊ ¹ doktə,smɪf/	"man called Doctor Smith"
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Russell:	[¹ spæ.mən ¹ ʃɪɪps]	/ ¹ spæmən ¹ ʃɪps+/	"Spam and chips."
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John:	[¹ s ² tæ.nɪdə ¹ fæɪtʃɪz]	/ ¹ stænɪðə ¹ fæɪtɹɪz/	"Stand near the factories"
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David Gl:	[¹ æ.ɪdə ¹ æp ^h ʊ]	/ ¹ ædə- ¹ æpu/	"had a apple"
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John:	[¹ ɪ.æ.thə ¹ fɹəʊɪɪ]	/ ¹ ɪ.æ.tə ¹ fɹəwɪt/	"he had to throw it"
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Teresa:	[¹ ævəvəm ¹ gaj]	/ ¹ ævərəm- ¹ gaj+/	"have ererm, guy."
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c) Before single medial consonants that are not word-final
/æ/ is short:

Ross:	[gɔʔə'bəŋə]	/gɔtə'bæŋə/ "got a banger"
Russell:	[ˈkʰæʊəʃiʔ]	/ˈkæriʃit/ "carry it"
Kathleen:	[ˈpɕænəs]	/ˈpjænəs+/ "pianos."
Jenny:	[ˈmæʒiʔk]	/ˈmæʒik/ "magic"

d) /æ/ is also generally short in unstressed syllables that are not utterance-final, and in stressed syllables terminated by fortis consonants if these do not occur before /+/, or /-/, or b

Jackie:	[wɔ̃æʔ'tʰeɪ]	/wiæʔ'tiʃ/ "We have tea"
Ross:	[ʔhæd'tʰæʊ'mæʔtʰesɪz]	/ʔjhæd'tuw'mættresɪz/ "I had two mattresses"
Clifford:	[kɕæʃt'ðœmɪ'dʰeɪf]	/kræʃt'owmi'diʃf+/ "crashed all my teeth."
Philip:	[ˈdæʔ'bɪʒʔ]	/ˈdæt'big+/ "that big."
Diane:	[ˈdaɪæŋ:]	/ˈdaɪæn?/ "Diane"

Variants

Open variants of /æ/ are rare among the 9-year old group.

Only one example is recorded:

David G1:	[,wɔʔ'tapmɪs]	u/,wot'æpens/
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This could perhaps be regarded as an accidental replacement of /æ/ by the open short vowel /a/. Replacement of /æ/ by

the closer vowel /e/, on the other hand, is relatively frequent by comparison. It may be that the closer variants are associated with less formal elements of speech - even though /'kæts/ and /'kets/, /'tæne/ and /'tene/, were recorded in the same recorded interviews:

John: [tʰanzə'kɛts] /'tanzə'kets+/ "tons of cats."
 " : [s'kʰæts] /s'kæts-/ "there's cats"
 Tony: [geɪ.ɪtʰɛnə,ɹæt+] /git'tæne,ɹæ:t+/ "get tanner out."
 " : [tʰæne] /'tæne/ "tanner"
 Jenny: [ɛndʰ] /end-/ "and..."
 Elaine: [næd'fɹi:] /næd'fri:/ "and I had three..."

/æ/ does not normally appear in open syllables, but if a final consonant is not articulated it may be followed by /+/. This seems to happen especially often with the word "that":

Teresa: [vɛmənɛ,ɹætʰ] /'rɛwmənɛn,ðæt+/ "Romans and that."
 Tony: [gɛɪ.ɪtʰɛnə,ɹætʰ] /'getofɛ'ðæt+/ "get off of that."

ix /æ:/

Stressed: "round"/'ræ:nd/ "out"/'æ:t/ "hour", "our" /'æ:/
 Unstressed: "our house"/æ:'ræ:s/ "how many" /æ:'meni/

This vowel has monophthongal and glided allophones in all positions. Glided variants are from a starting-point near

/æ/ to a central position or further back than this, to centralized back half-close, with or without lip-rounding - [æ̠], [æ̠ʷ], [æ̠ʷ]. The first part of the vocoid may be prolonged, with a glide of a fairly rapid nature - [æ̠.ə], [æ̠.ʷ], [æ̠.ʷ]. Glides to a closer position in the front region are also found, though these are relatively rare - [æ̠.ə]:

- Ross: [ənə'mæʊs] /ənə'mæ:s+/ "and a mouse."
 Philip: ['nɔʔt̪^səʔ'dæ̠.ʷ] /'nɔt̪t̪ə'tdæ:n+/ "knocked it down."
 Ross: [dæʋn'hæʊd'hɪɹ̥] /dæ:n'hæʊd'hɪl+/ "down Harold Hill."
 Tony: [geʔ.ə't̪^sənə,jæ̠ʷʔ] /git̪t̪ənə,ræ:t+/ "get tanner out."
 Russell: ['dæ̠.ə.n, st̪ɛ:z] /'dæ:n, ste:z+/ "downstairs."
 Teresa: [geʋs'dæ̠.ən mæʔgeʋz'væ̠.ənd] /gəʋs'dæ:n mæt̪gəʋz'ræ:nd+/
 "Goes down but goes round."

In this survey monophthongal variants are more common. These may have the tongue position of /æ/ but differ from it only in length - and then only in those positions where /æ/ is not lengthened or glided:

- David G1: ['k^xæ:bɔ̠ɹ̥z] /'kæ:bɔjz/ "cowboys."
 Teresa: [æ: 'vAɹ̥d̪ə, jəʊ] /æ: 'rawd̪ə, juw+ɹ̥/ "How old are you?"
 Kathleen: [ə, bæ:ʔ^hɪʔ^h] /ə, bæ:tɪt+/ "about it."

There are also allophones that are less tense, less fronted and with the lips less tensely spread, perhaps slightly rounded - [æ̠̠̠], [æ̠̠̠.ə]. These slacker variants may be conditioned

by consonants such as /w/, /p/, /b/ which encourage rounding of vowels, or by /r/ which sometimes causes centralization and slackness; or they may be unconditioned:

Clifford: [bæ̞.2, læ2'de'ʔb] /bæ:t, læt'diɹp/ "about that deep"
 Jeanette: [ˈbæ̞:2ə'wæ̞lʔkʰ] /ˈbæ:tə'wiɹk+/ "about a week."
 Jackie: [ˈvæ̞:ndəz] /ˈræ:ndəz+/ "rounders."
 Jeanne: [ændæ̞'tʰɔ̞ʔəs] /ændæ:təʔtəʔs/ "and our tortoise"
 Tony: [ˈnæ̞.ɹɪz'mæ̞ʊð] /ˈnæ:rɪz'muʔð+/ "now he's moved,"

In open syllables, where /æ/ is not usually found, /æ:/ may lose the feature of length and still be distinct from /æ/.

In closed syllables, however, the length feature is crucial, and shortened /æ:/ is considered to have weakened to /æ/:

John: [ˈkʰämæ2ə'wɛ̞:ʔkʰ] /ˈkamætə'wɛ:k+/ "come out of work."
 Jackie [tʰə.n:ɹɪʔt'ænd] /ˈtə:n-ɹajt'ræ nd/ "turn right
 round"
 Vivienne [ˈadʔə'neunæ̞] /ˈaɹdæ'næwnæ:+/ "I don't know now."

Even where /æ:/ is a fully long glide, in those situations where /æ/ is long or glided the distinction between the two phonemes may be lost, and the sense of an utterance will depend on contextual cues. Before nasal and lenis consonants, for example, in stressed syllables, /æ:/ is as likely as /æ/ to have tense allophones, so that there is no tense - lax contrast between the two. An utterance such as

Jenny: [ˈfæ̞:ndɪm]

could equally well be "fanned him" or "found him". It is the second meaning which the context of the utterance supplies.

/æ:/ and linking /r/

Like /i:/, /e:/ and /o:/, /æ:/ may be linked to a following vowel by /r/, which is in many cases intrusive:

Teresa: [æ:'vAɹdʒə,jəʊ] /æ:'rawdə,juw+/ "How old are you?"

It may also be followed by another vowel without /-/ intervening. The sequence /æ:ə/ is reduced to a monophthong in rapid and informal speech, but some speakers may realize it as a triphthongal, disyllabic vocoid:

Kathleen: [ðə'flæ.vəz] /ðə'flæ:əz / "the flowers."

Coalescence of this sequence into a monophthong or diphthong is more frequent. "Our" is almost invariably realized as /æ:/, and coalescence may take place across word-boundaries:

Clifford: [gə,læ:vɪt] /gə,læ:vɪt-/ "Get out of it..."

As with /i:/ and /e:/, two-directional vocoid glides are found for this phoneme. Again, however, none were recorded in the speech of the 9-year old group, and we have to turn to the younger groups for samples:

Carl: [kʰam'æjəʔ] /kam'æ:t+/ "come out."
 (5,10)
 "it" [ɪts'nɔʔ'æədʔ] /ɪts'not'æ:d+/ "it's not ourn."

x /æj/

Stressed: "eight" /æjt/"okay" /əw'kæj/"playing" /'plæjɪn/

Unstressed: "speedway" /'spi:ɪdweɪ/ "won't they" /'wɒntðeɪ/

/æj/ has a starting-point between half-open and open, slightly lower than /æ/ and centralized. Variation in the starting-point covers an area from open to half-open, though the more open variants are commoner than the closer ones. From this area it glides towards front and close, though this end-point is not always attained:

Jeanette: [,gæɪm] / ,gæɪm/ "game"

David G1: ['plæjumɪ'meɪtʃts] /'plæjumɪ'meɪtʃts+/ "play with my
mates."

Teresa: [ˈbɔːf, dæɪ] /ˈbɔːf, dæɪ/ "birthday"

Clifford [2^hai2^h] /+^hæjt+/ "eight."

Diane: ['gɹæjəm] / 'græjəm / "Graham"

In some contexts the vowel may glide to a central position, or there may be long monophthongal variants. This happens particularly before vowels, so that in these and other positions there is a reduction of the contrast /ɛ:ɔ/ - /ɛɨ/:

Jenny: ['stæ·ənə?'piəri?] /'stæjənəp'plæjt/ "staying up late."

Ross: ['næv 'kəmiŋə 'lɔ̌.ŋ] / 'næju 'kəmiŋə 'lɔŋ /
"and they were coming along,"

Clifford: ['pɪʃ.mə'liɪtʃtɔɪ] /'plæ:məj'liɪtʃtɔɪ+/
 "(and) play with my little toy."

John: ['tʰvæ·n,nʌ̃·ns] / 'træjn,najns/ "train-lines"
 Ross: ['spɛɪdwæ̃·] / 'spɪjdwæj/ "Speedway"
 Clifford: ['tʰæ̃·brz] / 'tæjbowz/ "tables"

Weakening to /æ/ occurs less frequently for this vowel than for /æ:/ . It occurs most frequently in common expressions such as "ain't", in which the weakened form may be /æ/ or /a/:

Tony: [æ̃'gɔt|naθɪ̃ŋ] / æ̃'gɔd|naθɪŋ+/ "ain't got nothing."
 Diane [æ̃'gɔʔ,wənʰ] / æ̃'gɔt,wən+/ "Ain't got one."

The word "they" may have a short vocoid which is still /æj/ because in an open syllable, where /æ/ may not appear. It may also be replaced by /e:/ in this word only. This is perhaps by analogy with "they're" or, in the first of the examples below, a weakening of /el-/ to /e:/:

David Gr: [ðɛ̃·'gəw̃·nə'pʰiʔtʰwɛ̃nʔðæ̃ŋ] / ðe: 'gəwunə'piʔtʰwɛ̃ntðæ̃jən/
 "They'll go on the pitch, won't they, and..."
 Jenny: [æ̃nɛ̃'fæ̃:nd] / æ̃ndɛ: 'fæ:nd/ "and they found..."

This apparent weakening of /æj/ to /e:/, or interchange of the two, in this word, is a characteristic of some Nursery speakers (see IV, 3.2 x).

κ1 /æ/ , /æ:/ , /æj/ + /l/

/æl/ , /æ:l/ and /æjl/ are contrastive when followed immediately by a vowel; thus "alley - hourly", "daily - daily" are possible

minimal pairs. Before open and external juncture, however, or before a consonant, these oppositions are reduced, and the sequence /æɪ/ generally results. This takes the form of a glide from below front half-open to the back half-close region, with or without lip-rounding - [æɪ], [æo], [æɣ], [æv]:

Philip: [ʃɪdʒəs'fæɪzə] /ʃɪdʒəs'fælzə+/ "She just fouls you!"

Clifford I: [t̪'æɪs.əm'njəvəʔ] /t̪'ælsrəm'njərəp+/ (8,1)

"Tales From Europe."

Kim: ['mɪstə'wæɪ] /'mɪstə'wæl+/ (5,8) "Mister Whale."

Sean: ['fəʊɪt̪wəðə: 'bʷæɪ] /'fəʊɪtwəzə? 'wæl+/ (5,11)

"thought it was a whale."

This sequence is distinguished from /æ:/ by the extent of the vocoidal glide. /æɪ/ has a glide which moves to almost fully back and half-close. /æ:/ has a relatively narrow glide, usually to no more than back of central and half-close. If the glide of /æɪ/ is diminished for some reason, then /æ:/ may be considered to result from this weakening:

Paul Sh: [t̪'v'fɛtʃə'pæd'wɔ: t̪'sə] /tu'fɛtʃə'pæ:ə'wɔ:tə+/ (5,3)

"to fetch a pail of water."

Tony S: [ɒnə'væ.wəz] /ɒnə'ræ:wəz/ (8,1) "on the railways"

In emphatic or very careful speech the sequence /æɪl/ may occur:

Carl: [æɪ'faɪndfə'sæɪv] /æɪ'faɪndfə'sæɪl+/ (5,10)

"they find 'For Sale'."

Before /+/, /-/ and consonants, the sequence /æ:əl/ is reduced to /æɪ/ in Cockney, so that "towel" and "tail" are homophones.

11 /a/

Stressed: "brother" /'brʌvə/, /'brʌðə/ "Mum" /'mam/ "Colour"
/ 'kələ/

Unstressed: "everyone" /'evriwən/ "I'm going to " /əj'gəne/

This short vowel does not display a great deal of variation in its realizations. It is predominantly a short, front, open vocoid, which may be slightly raised and centralized -[a], [ä],

[ʌ]. The lips are open and spread, but not tensely so:

Russell: ['vasöy] /'rasow+/ "Russell."

David G1: [dʒʌm²'tʰapʰ] /dʒamp'tap/ "jumped up..."

Philip: ['fɪjɜm,wɜns] /'fɪjɪm,wans+/ "fishing ones."

Tony: [ə'mʌʔʔəʔwü'gɛʔ] /ə'matʔəduw'get/ "How much did you
get..?"

Slightly closer allophones are recorded in the region of [æ], in stressed syllables; these are regarded as /æ/:

John: [də'kæfə'dæm²] /də'kæjə'dæmp+/ "the kind of dump."

Diane: [dɪ'fɛ:s'dæɛʔ] /əj'fɛ:s'dænet/ "I first done it"

Teresa: ['fɛi'brævɛz] /'frɪj'brævɛz/ "three brothers"

However, where /a/ is lengthened and glided, as in utterance-final syllables and syllables ending in a nasal or lenis plosive consonant, it seems to retain an almost fully open quality at the beginning of the glide:

Jackie: [tʰəmɪ'maəm] /təmaj'mam+/ "to my Mum."

Vivienne: [ˈiːrɛnɪj, wən] /ˈiːrɛnɪj, wən+/ "hear anyone."

Diane: [fəˈɡɒtənəs, ˈmaʃ] /fəˈɡɒtənəs, ˈmaʃ/ "forgotten how much."

Words with /a/ may have alternate forms with /ə/, stressed or unstressed:

Ross: [ˈfɔːrəvəs] /ˈfɔːrəvəs/ "four of us"

John: [ˈsəm, tʰa.ms] /ˈsəm, tʰa.ms/ "sometimes"

Just as /ə/ may be found in stressed syllables, so may /a/ occur in unstressed positions:

Diane: [ˈænˈɡɒt, wən] /ænˈɡɒt, wən+/ "Ain't got one."

David Gr [ˈpɪtʰəˈbɒwəp] /ˈpɪtʰəˈbɒwəp+/ "pick the ball up."

Thus a phonemic system which expresses /a/ and /ə/ as stressed and unstressed /ə/ respectively would be hard put to it to accommodate this characteristic of the type of London speech under consideration .

11 /ə/

Stressed: "just" /ˈdʒəst/ "don't know" /ˈdɒnəw/ "going to" /ˈɡənə/

Unstressed: "a", "of", "have" /ə/, "was" /wəz/ "another" /əˈnəvə/

/ə/ is usually a short vowel of a central, half-open to half-close quality. The lips are held slackly open, though they may be rounded somewhat in the vicinity of /w/ and, possibly, of

/r/. The allophone described here is found in unstressed syllables that are not utterance-final: there are also a few cases where /ə/ may have primary stress in non-utterance-final positions, though these are confined to a limited number of expressions:

(unstressed)

Jeanette: [ˈnɔʔəˈwɪʔθəˈbʌʔəˌflʌ•ɪ] /ˈnɔtəˈwɪθəˈbʌtəˌflʌj+/
 "Not a width of butterfly."

Kathleen: [sənˈtʃæːzəz] /sənˈtræːzəz/ "some trousers"

Elaine: [ˌʃiweɪˈskɹeɪmɪ] /ˌʃiweɪˈskɹɪjmin/ "she was screaming"

Jenny: [ðəˈpɹɪnʔsəsəmˈpɹɪnʔs] /ðəˈprɪntsəsəmˈprɪnts/
 "the Princess and Prince"

(stressed)

Diane: [ˈdʒəstəbæːʔ] /ˈdʒəstəbæːt/ "just about"

Kathleen: [ɪˈdənəɪ] /aɪˈdənəw/ "I don't know..."

John: [ˈtwənɪˈwaːn] /ˈtwənɪˈwan+/ "twenty one."

Jenny: [ˌʔəŋgɪʔˈɪntəɪzˈɪːʔ] /+ˌəŋgɔtˈɪntə-ɪzˈɑːt/
 "One got into his heart"

Diane: [wɔʔwəzˈgənəʊˈwəpən] /wɔtwəzˈgənuwˈəpən+/
 "what was going to happen."

Before /+/, /ə/ has allophones that may be lengthened and may also be considerably fronted and lowered -[ɜ], [ɛ̃], [æ̃], [ä̃]. In this position too /ə/ may carry stress which is in many cases as strong, and gives the syllable as much prominence, as other

primary stresses preceding it in an utterance. These stressed, utterance-final open syllables appear to occur only in words that already have one primary-stressed syllable, as ['sɪs·'dɪ] "sister"; ['dɪfə·nɪ] "different"; ['dʒɪŋ, dʒɪ] "ginger"; [ɔtə'ge, və] "altogether". It will therefore prove convenient for these 9-year old speakers to classify this final stress as secondary stress, since it is usual for one word to have only one primary stress. The vocoids in these open final syllables are considered to be realizations of /ə/, firstly because it would be confusing and unsystematic to classify them variously as stressed and unstressed /a/, /æ/, /e/ and /e:/, and secondly because /a/ and /æ/ do not appear in stressed open syllables in any other context. Most importantly, there is no contrast involved between ['buav·ə], ['bɹa, və] and ['bɹa, və·], and thus no reason for attributing these realizations to different phonemes. Further illustrations of this phenomenon are:

Elaine:	[, dʒɪs ^s 'mɪs ^s , tə]	/, dʒas'mɪst, ə+/	"just missed her."
Jeanette:	[bətʍɪ'ne, və]	/bətwi'ne, və+/	"but we never."
Diane:	[təʊ'brʌvə·sɪ]	/'tuw'brʌvəs+/	"two brothers."
David Gr:	['dɪfə·nɪ]	/'dɪ, frɛnt+/	"Different?"
David Gr:	['æɪn ² , jəʊ]	/'æjnt'jə+/	"Ain't you?"
Ross:	[mɪs'mɔʊ, gən]	/mɪs'mow, gən+/	"Miss Morgan."

/ə/ may not be followed by another vowel without /-/-/ linking the two:

David Gl: ['stɔ:fə̃'snə,kwi:n] /'stɔ:ɪə-ə'snə,kwi:n+/
 "story of the Snow Queen?"

/ə/, like the other weak forms /ɪ/ and /ʊ/, may be expressed in a non-vocoidal way, by the syllabic lengthening of a contoid, or by a single contoid with syllabic function (see 5.2 below).

/e:/

Stressed: "Thirty first" /'fe:tɪ'fe:st/ "birthday" /'be:fdæj/
 "weren't" /'we:nt/

Unstressed: "fireworks" /'faɪwɜ:ks/ "in her broom" /'ɪnə:'ruwm/

/e:/ differs from /ə/ in length. It also has allophones which are more fronted than /ə/, and may become rounded. This rounding presumably avoids confusion with centralized /e/ and /e:/ (not always successfully, however; see V, 3.2iii):

Ross: ['be:nʔ] /'be:nt+/"burnt."
 Teresa: ['fɛ:t^sə'fe:st] /'fe:tə'fe:st+/"thirty first."
 Jenny: ['lɪɪʔr'gɛ:de] /'lɪtəw'ge:de/"little Gerda"
 David Gr: [mʌ.ə'βə:f,dæɪ] /maj'be:f,dæj/"my birthday"
 Clifford: [wɛ:nʔ'fʌ,ɪf] /'we:nt'fan,ɪj+/"weren't funny."
 Jeanette: [əbɪʔ'fɛ:və] /əbɪt'fe:və/"a bit further"

The rounding and fronting of this phoneme are slight, and these attributes are not so distinctive as the vowel's length, and the fact that it occurs mainly in stressed syllables. This

distinguishes it from /ə/, which is generally short except in syllables before /+/. /e:/ may still be short and retain its phonemic identity in a stressed syllable. If it is both short and unstressed then it is possible that rounding and fronting may in some cases serve to distinguish it from /ə/. They may be considered secondary features, without contrastive function save in a few instances. Thus:

Ross: [mis·'græimbɛ̃·g] /mis-'grɪjmbɛ:g/ "Miss Greenberg"
 Diane: ['fäɪwɛ̃:z'nʌ:z] /'fajwɛ:k'najt+/ "Firework Night."
 where /e:/ is unstressed but long;

Kathleen ['wɛ:ksɪnə'fæk·tʃɪ] /'wɛ:ksɪnə'fæktri:/
 "works in a factory"

where it is stressed but short;

Teresa: [gɔz'sambɛ̃z] /got'sambɛ:t+/ "got sunburnt."
 Kathleen: ['fA·rwɛ:ks] /'fajwɛ:ks/ "fireworks"

where fronting and rounding distinguish /e:/, compared with /ə/ in:

Clifford: ['fɪg·əwɛ:ks] /'fajwɛks/ "fireworks"
 Vivienne [zə'fɑvə'daɪd] /+ə'fɑ:və'daɪd/ "Her father died"

▼ /əw/

Stressed: "Roman Road" /'rɔwmən'rɔwd/ "phone-box" /'fəwm,bɒks/
 "won't they" /'wɔwn'tɔɛj/
 Unstressed: "don't" /dəwnt/ "go out" /gəw'ɔ:t/

The most common realization of this vowel is a glide from front of centre, between half-open and open, to a back of central half-close or slightly closer position. Lip-rounding may or may not occur in the second part of the glide - [ɘ̯], [ɘ̯w], [ɘ̯u]:

David Gr: [ʔā·f'gə̯, gud] /+a:f'gəw, gud+/ "Half go good!"

Vivienne: [ʔAɪfə̯dʒ, rə̯b'bə̯] /+ʔaɪfəw, rəwb'bəw/
"Old Ford Road, Bow"

John: [ʔmə̯stə, tʰā̯] /ʔmə̯stə, tāj̯/ "most of the time"

Philip: [p'kʰā̯.nə̯] /bə̯'ka:nəw / "Meccano."

Other, less common starting-points may be somewhat closer - [ɛ̯]- or more open - [ɐ̯], [A̯]:

Ross: [ʔmə̯stə̯, tʰaɪ̯m] /ʔmə̯stə̯, tāj̯+/ "most of the time."

Tony: [ʔdA̯ʔ, maɪ̯n] /ʔdə̯wnt, maɪ̯n/ "Don't mind"

Among girl speakers /ə̯w/ may take the form of a glide to a front half-close to close end-point - [ɛ̯ə̯], [ɛ̯y̯]. This variant is not recorded at all in boys' speech:

Diane: [ʔzə̯.nʔ'nə̯.ə̯] /,dant'nəw+/ "Don't know."

Jenny: [ʔæ̯ʃtɹənʊʔ'ʃə̯] /ʔæ̯stɹənʊt'ʃəw+/ "Astronut Show."

Vivienne: [ʔnə̯y̯] /ʔnəw+/ "No."

Kathleen: [sə̯ʔ'stəɪvənʔ'z.ɹə̯.ɹə̯dʰ] /sət'stɪjvənʔ'z.rəw+/
"St. Stephen's Road."

Monophthongal variants of this vowel are relatively frequent. These are found in conditions favourable to shortening and

reducing of glides, such as before another vowel, in unstressed or lightly stressed non-utterance-final syllables. These monophthongs vary in quality in the same way as the starting-points of the diphthongal variants:

- Jenny: [,gə·ap^h] / ,gəwəp/ "go up..."
 Vivienne ['gə:ənə'big·'wɪ·ʊ] / 'gəwənðə'big'wil+/ "Go on the big wheel."
 Elaine: [gə·baɪ' b^fas] / gəwbaɪ'bus/ "go by bus"
 Jenny: [t^hə,xə·ən,t^sɛɹ] / tə,gəwən,tel/ "to go and tell..."

Monophthongization can also take place in stressed, prominent syllables, and in utterance-final positions where there are no shortening factors in operation:

- Jeanette: ['e:nɪ'omæ·'bæ·ʔkɜ] / 'əwnɪ'omæ:'bæks+/ "only on our backs."
 Kathleen: [ðə'neɪ] / də'nəw+/ "Don't know."
 Jenny: [,prə·gɹæmə] / ,prəwgræms+/ "programmes."

Particularly open and fronted monophthongs are found in the word "no" - ['nɛ̃·], ['nɛ̃·], ['nə̃:]. When the monophthongs described above are shortened a vocoid similar to /ə/ or to /a/ may result. Neither of these short vowels may occur before a vowel in close juncture, so that in this position shortened unstressed /əw/ retains its phonemic identity:

- Vivienne: ['rəwəv'liʔv·,flæʔʔs] / 'rəwəv'litəw,flæts+/ "row of little flats."

In closed syllables, however, /əw/ may be considered to have weakened to /ə/ or /a/. Weakening to /a/ is found frequently in the expression "don't":

Clifford: ['kʌməm'həm'skɔ:ɹ] /'kaməmhəm'skɔw/ "come home from school"

Diane: [dʒən2'nə*] /dant'nəw+/ "Don't know."

Jeanette: [dʒe'naɪ2,ðe.2h] /da'naɪk,ðet+/ "don't like that."

Paul H: ['dʌn2,lA:2'kpɛɪdɪn] /'dant,lajk'kriɪdɪn+/
(6,11) "don't like reading."

/əw/ is frequently replaced by the weak form /ə/, even in stressed syllables:

Diane: [wɔ?wɛz'gənəʔ'wæp'hən] /wɔtwɛz'genuw'æpən+/
"what was going to happen."

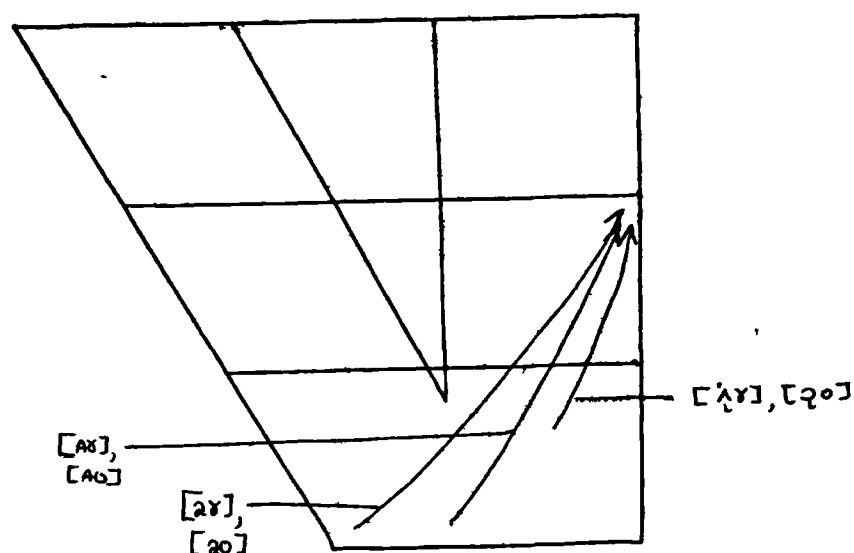
Kathleen: [ə'dənəʔ]/əj'dənəw/"I don't know..."

/aw/

Stressed: "old" /'awd/ "doll" /'daw/"roller skates" /'rawlə
,skæɪts/

What distinguishes this vowel is probably not so much its starting-point as the extent of its glide, which travels much further than in allophones of /əw/. The starting-points cover a wide area, ranging from front open [a], central open [ʌ], to back of central or further back, below half-open - [ɤ] or [ɘ]. From these positions the glide is towards the fully back half-

close region, with or without lip-rounding:



Teresa: [ˈgɛʔɪnˈɛɪdʔ] /ˈɡɪtɪnˈawd+/ "getting old."

Vivienne: [ˈɪʔfɔɪdʔ, ɪwɒbˈbeɪ] /+ˈawfɔɪd, rɒwɒbˈbew/
"Old Ford Road, Bow"

Russell: [ˈɛɪd, hɔɪs] /ˈawd, hɔɪs/ "old house"

Diane: [ˈɪʔlɔ, skɛɪts] /ˈrawlɔ, skɛɪts+/ "roller skates."

Clifford: [ˈɪˌɔdnˌɪʔ] /ˈawdɛnnɪt+/ "holding it."

The contrast /əw/ - /aw/ is a real one for these children (see 4.1 ivb above), but it is not always observed, due partly to the rarity of /aw/ in comparison with /əw/. Even at 9 years we find:

Elaine: [vɛwˈkæɪnsˌɪs] /vɛwˈkæɪnɛws+/ "volcanoes."
instead of /vawˈkæɪnɛws/. One speaker alternates the two

forms in:

Teresa: [tʰəʃ:u'kʰɔ:mz] /tʰə:u'kɔ:mz+/ }
 [tʰəʃ:lɪ'kʰɔ:mz] /tʰə:lɔ'kɔ:mz+/ } "Sherlock Holmes."

This may be compared with the historical development in English, which has resulted in /əw/ - forms in "folk", "Holborn", "yolk".

vii /aj/

Stressed: "eye", "I" /aj/ "firework" /'fajwə:k/ "guy" /'gaj/

Unstressed: "my" /maj/ "by" /baɪ/

This vowel is commonly a glide from back or back of central, fully open, towards front half-close to close. The glide is most extensive before /+/ and in stressed prominent syllables:

Ross: [ɪn:ɪ'aɪ] /ɪnnɪ'aɪ+/ "in the eye."

Teresa: [ɔwɪə'taɪm] /ɔwɪə'taɪm+/ "all the time."

Elaine: [dɔwt'laɪkəm] /dɔwt'laɪkəm+/ "don't like them."

Kathleen: [daɪn] /'naɪn+/ "Nine."

The starting-point is usually no further fronted than central or front of central - [ʊ], [ɪ]. Glides from fully back seem to be characteristic of more vigorous or dialectal types of speech: they may be slightly or even fully rounded - [ɔ], [ɒ]:

Elaine: [ˈoʊlɪtʰɪ] /ˈoʊlə,taj+/ "all the time."
 Jenny: [A,lɛɪpˈleɪŋ] /əj,lajpˈplæjŋ/ "I like playing"
 Jackie: [ˈnaɪn] /ˈnaɪn+/ "Nine."
 David Gr: [ˈwaɪt,hɑːtˈleɪn] /ˈwaɪt,aɪtˈleɪn+/ "White Hart Lane."
 John: [ˈnæɪ,bɔɪtɪs] /ˈnæɪ,bajts+/ "gnat bites."
 John: [əˈɡaɪ] /əˈgaɪ+/ "a guy."

The end-point of the diphthong may fall anywhere within the region from above half-close to above half-open, central to front - [ɛ],[ɪ],[ə],[ɜ]:

Elaine: [ˈseɪ,sæɪdʰ] /ˈsɪj,sajd+/ "sea-side."
 Diane: [tsˈnaɪs] /tsˈnaɪs+/ "it's nice"
 Jackie: [sɪˈvʌɪtʰ] /suˈraɪt+/ " 's all right."
 Vivienne: [ˈkʰələʃˈhaɪs] /ˈkaləʃoˈhaɪs+/

"(What) colour's your eyes?"

Monophthongal allophones are found in both stressed and unstressed syllables, and show as much variation in quality as the starting-points of the glided variants. In unstressed syllables the vowel is shorter and the quality may tend to be more central or fronted:

Philip: [wɪˈmɑːsɪstə] /wɪˈmajˈsɪstə/ "with my sister"
 Jenny: [ˈkɪɑːmd,aɪpdaɪˈwɔː] /ˈklaɪmd,apdaɪˈwɔː/ "climbed up
the wall"
 Tony: [ˈaɪlɪtʰə] /ˈajlaɪttə/ "I like to..."
 Ross: [ˈæswɑːdaɪn] /ˈæswajaj,dəwnt/ "That's why I don't"

Jackie: [t̪əˈmɪA2ˈrændlA2ˈdʒæt] /t̪əˈn̩rɑjtˈrændlɑjkˈdʒæt+/

"turn right round like that."

David Gr: [læ2kˈwʊt] /lækˈwʊt+/ "Like what?"

"I" and "my", when they have forms with /ɑj/, almost always have monophthongal forms at this age, whether stressed or unstressed:

Ross: [ˈAnɪːlɪˈgɔt] /ˈɑjɪːlɪˈgɔt/ "I nearly got"

Vivienne: [2Aˈkˈɜːn2rəˈmɛm.bə] /+ɑjˈkɑːntreˈmembə+/

"I can't remember."

David Gr: [2d̪ˈlAɪ?kˈsʌms] /+ɑjˈlɑjkˈsʌms+/ "I like sums."

Elaine: [ˈmAnæn] /ˈmɑjnæn/ "My Nan"

Clifford: [mAˈɜːdrʌm] /mɑjˈiːdrʌm/ "my ear-drum"

John: [ˈmɔpˌeɪs] /ˈmɑjplæjs/ "my place."

When /ɑj/ is followed by another vowel the glide is reduced and coalescence of the two vowels may take place:

Clifford: [ˈbɒmfʏəmːɔˈgɑːdn̩] /ˈbɒmfraɪəmmɑjˈgɑːdn̩/

"bonfire in my garden"

Elaine: [ˈkɹɑːɪn] /ˈkraɪɪn/ "crying"

David Gl: [ənˈAː2d̪əˈgɔ̃] /ənˈɑːtd̪əˈgəw/ "and I had to go"

though careful speech may separate the syllables:

Jackie: [d̪ˈeːaɪ ɔsˈwɛn] /d̪ə-ɑjəsˈwan+/ "the highest one"

Diane: [ˈdaɪən] /ˈdaɪən/ "Diane"

In words such as "fire", "wireless" a sequence /ɑjə/ may be preserved or may coalesce to create a long monophthong :

Ross: [ˈfɪr̩ə, wɛ̃.2] /ˈfajə, wɛ:k/ "firework"
 John: [ˈbɒm, faɪə̃] /ˈbɒm, ʔajə+/ "bonfire."
 Elaine: [ˈfɪr̩ə, wɛ̃.2] /ˈfa:, wɛ:k/ "firework"
 Jackie: [ˈwʌɪ̃, lɪs̃] /ˈwa:, lis/ "wireless."

However, since the monophthong is a common allophone of /aj/, and there is no contrast between it and the monodirectional glide in this context, it is not unusual to find forms of "fire" with /ˈfaj/ beside /ˈfajə/ and /ˈfa:/:

David Gr: [ˈlɪr̩ə, fɪr̩.ɪz] /ˈlɪtəwˈfajz/ "little fires"
 Diane: [ˈfɪr̩wɛ̃.2, nʌɪ̃.2] /ˈfajwɛ:k, naɪt/ "Firework Night"

Two-directional glides from open back to back half-close rounded and then to front half-close are found in this phoneme. Again, as with /i:/, /e:/ and /æ:/ these are more common in the recordings of 5 and 6-year-olds than at other ages:

Lorraine: [ˈseɪ, sɪd̩.ɪz] /ˈsɪj, saɪd+/ "sea-side."
 (5,0)

11 /ɑ:/'

Stressed: "art" /ˈɑ:t/ "garden" /ˈgɑ:dən/ "starving" /ˈsta:vɪn/
 Unstressed: "Class 2" /kla:sˈtuw/ "last night" /la:sˈnaɪt/

There is little difference between allophones of /ɑ:/ and some of the monophthongal allophones of /aj/. /ɑ:/ is predominantly a long pure vowel in the back open region. Fully back vocoids

are probably products of more vigorous, informal styles of speech, and it may be that they occur more frequently in boys' than girls' speech at this age: both back and central variants are found in boys' and girls' speech:

John: [ɪʔwəs'a:fə'naəs,waʃ] /ɪtwəs'a:fə'naɪs,wan+/

"It was half a nice one."

Clifford: [äwəz'stɑ:vɪn] /ɑjwəz'sta:vɪn+/ "I was starving."

Russell: [lɑs̃'næʔ] /lɑ:s'naɪt/ "last night"

Elaine: ['stɑ:'fɪʃ] /'sta:,fɪʃ+/ "star fish."

Jackie: ['ʔɑ:s,məɪ] /+ 'ɑ:s,mɪj/ "Ask me..."

This vowel may have glided variants, but unlike /ɑj/, the glide is never to a point closer than half-open, and usually to a position only slightly raised from open and central:

Teresa: [ˈfɹʌn̩s̃] /'fra:nts+/ "France."

Clifford: ['rɒbɪ'gɒdɑːd̩] /'rɒbɪ'gɒdɑ:d+/ "Robby Goddard."

John: [ð̩z,ʌf'leʔf] /ðez,ɑ:f'lef-/ "There's half left,"

A glide in the reverse direction, from central open to back open, is also found:

Russell: [kəʔoʔ'dɑ.ɑ̃k̩] /kəsow'dɑ:k+/ "because it's all darkk."

Diane: [mɪ'ʌŋ.ʔts̩] /mɪ'a:nts+/ "my Aunt's."

As with /ɑj/, rounding of vocoids is also found, and this may be associated with informal speech:

Clifford: [w̩y'ʃk̩g:ʔb̩] /wi'ska:pə/ "We scarper..."

In unstressed syllables the vowel may have shortened and cent-

realized allophones. These weakened forms of /a:/ are indistinguishable from weakened forms of /a j/ in similar contexts:

John: [kɪAs^s 't^hwe²ks] /kla:s'tuweks/ "Class 2X"

Jeanette: [k²Ä²'dü·ɛnɪ] /ka:nt'duweni/ "can't do any"

ix /a j/ . /a:/ + /l/

/a j l/ and /a: l/ may be contrastive if a vowel follows /l/ in close juncture, as in "styling - starling". Before /+/, /-/ and consonants, however, this contrast is largely neutralized. The resulting sequence /a: l/ is a glide from open back to back of central, towards back half-close, with or without rounding. The first element of the diphthong is sometimes prolonged:

Carl: [k²A·Ä] /'ka:l+/ "Carl."

Paul Sn: [p^ha:°] /'pa:l+/ "Pile."

Paul H: [fpe'lɔŋ'waq'ærneɪ] /frə'lon'wa:l-'æjni j+/

"...for a long while, ain't he?"

Janice: [waxæiwɛz't³ð:k^hɪn] /'wa:l-æjwɛz'towkin/

"while they was talking..."

More rarely, and usually only in careful speech, the sequence /a j l/ may be preserved; this is a two-directional vocoid glide, or a glide followed by velarized /l/:

Denise M: [waɪo[~]ðɛ'mave] /wa j l-ðɛ'mave/

"while their mother..."

Debra G: [ˈmʌv, bʌɪl, hɔːm] /ˈməʊ, baɪl-, həʊm+/ "Mobile Home."
 " : [ˈmʌ, baɪl hɔːm] /ˈmaɪ, baɪl-ˈhəʊm/ "Mobile Home"

In the last of these examples can be seen a case of assimilation of the vowel in the first syllables to the glide in the second - an indication of how vowel-like these glides to final /l/ are.

x /o/

Stressed: "box" /ˈbɒks/ "Bob-a-Job" /ˈbɒbə ˈɔːb/ "lorry" /
 /ˈlɒri/ "operation" /ˌɒpəˈreɪʃən/

Unstressed: "not always" /not ˈɒwəz/ "what else" /wɒt ˈels/

/o/ is in the back half-open region, though rarely fully back. From half-open it varies to closer positions, but seldom to more open - [ɔ], [ɒ], [ʌ], [ɔ]. Rounding is not pronounced, and may quite easily be lost, perhaps more frequently in unstressed than stressed positions and more frequently in utterance-medial than utterance-final positions:

Russell: [mɪˈbɒdə] /mɪˈbɒdə/ "my body..."

Teresa: [ˈlɒktənˈɡriː] /ˈlɒktənˈɡriː/ "Locton Green"

Teresa: [ˈspɒsəbiːˈɡɒd] /ˈspɒsəbiːˈɡɒd+/
 "supposed to be God."

Diane: [ˈmɒnɪˌstə] /ˈmɒnɪˌstə+/ "monster."

Kathleen: [ʔgʌʔsən'tʃu:zəz] /ʔj'gotsən'træ:zəz/

"I got some trousers"

David G1: [wɪʔ'ɛʌs] /wot'els/ "What else...?"

As with other vowels, longer and more glided variants occur before /+/, especially in syllables ended by lenis plosive or nasal consonants:

Vivienne: [ævə'dɔg^h] /ævə'dog+/ "have a dog."

Ross: [kʰamɪŋə'lɔŋ] /'kamɪŋə'lon+/ "coming along."

John: [fɔʊz'ɔf] /fowz'of+/ "falls off."

David G1: [bæ:ʔ'kɪɔʔks] /bæ:k'kloks+/ "about clocks,"

/ɔ/ may alternate with the closer short vowel /u/ in the pronunciation of certain words. This seems to be particularly true of common words such as "what", "was", "got", though it may occasionally be found in less familiar items:

Clifford: [wɔʊə'dəw] /'wɔʊə'duw/ "What did you do...?"

David Gr: [wʊd.əʊjə'faɪd] /'wʊddəjə'faɪd/ "What do you find"

Tony: [ðe'wɔz.ə'wɔʊ] /ðe'wozə'wow/ "There was a wall"

David G1: [ðæʔwʊs'fa.n] /'ðæstwʊs'fan+/ "That was fun."

Jackie: [gɔʔə'wʊ:lɪs] /'gɔtə'wa:lɪs+/ "got a wireless."

Vivienne: [gʊʔ'fe,hæ] /gʊt'fe,hæ:ʔ/ "got fair hair."

Teresa: [ʊʔtə,pɛs^h.s.] /'utte,pes+/ "octopus."

It is rare at this age to find substitution in the opposite direction, though one case is recorded in the speech of Jeanette:

Jeanette: ['ʊtʰəgeve] /'ʊtəgeve/ "altogether"
 " : [ʒtʰə'ge,və] /otə'ge,və+/ "altogether."

/o/ as a weak form is more common among younger children (see IV,322xx; V,341v).

In unstressed syllables in rapid speech /o/ is weakened to /ə/ . Often there is an intermediate vowel - centralized /o/ or slightly retracted rounded /ə/ - that it is difficult to allocate to one phoneme or the other:

Kathleen: [,wəʃə'færvæʔ] /,wəʃə(o)'fæjvret/"What's your
 favourite"

Clifford: [fɪtʰəiʒez,bleɪdɪn] /i'tɪjfe(o)z,blijdɪn/
 "my teeth was bleeding"

Theoretically this vowel should not appear before another vowel or before /+/, /-/. It may however do so when final consonants are accidentally omitted:

David Gr: ['gɔ̃e'liʔv,wən] /'go-e'litu,wən+/ "got a little one"

Jackie: [nɔ̃'ɔ̃wæes] /no-'owwæjs+/ "Not always."

x1 /o: /

Stressed: "stories" /'sto:rɪz/ "four" /'fo:/"drawing"
 /'drɔ:ɪn/

Unstressed: "your house" /jo:'ræ:s/

Glided and long pure vocoids are found in this phoneme: glides are more common in utterance-final position and monophthongs

in other positions, though this is not a rigid distributional feature. Monophthongal allophones cluster around the half-open position or slightly closer. [ɔ:] is more frequent than [ɔ]. As with /o/ rounding may be only moderate. Length is generally well maintained, though before /+/, where /o/ may not occur, it may be shorter than elsewhere:

John: [ˈdʒɔːvɪn] /ˈdʒoːrɪn+/ "Drawing."
 Teresa: [ˈnɛvˌsɔːdɪ] /ˈnevəˈsoːdɪ+/ "Never sawed it."
 Jenny: [ˈlʊkˌfɔːrɪm] /ˈlʊkˌfoːrɪm/ "look for them"
 Kathleen: [ˈdʒɔːvɪn] /ˈdroːrɪn+/ "Drawing."
 Diane: [θɹɪoˈfɔː] /θɹioˈfoː+/ "three or four."
 Vivienne: [ˈæʃˌmɔː] /ˈæʃˌmoː+/ "Ashmore."

The starting-point of the glide varies in the same way. Movement is to central position, or to a more open front of central position when the vowel is in an open syllable before /+/:

Philip: [nɛtsˈdɔːtʊwˌas] /netsˈdoːtuwˌas/ "next door to us"
 Teresa: [ˈdʒɔːvɪn] /ˈdroːrɪn+/ "Drawing."
 Elaine: [ɪnəˈwɔː] /ɪnəˈwoː+/ "in the War."
 Kathleen: [ˌɡrʌmˈflɔː] /ˌgræːmˈfloː+/ "ground floor."

Shortening of the vowel to /o/ may take place in both stressed and unstressed syllables. /oː/ is found mainly in open syllables where there is no contrast with /o/, but even before medial /r/, where a contrast is possible, as in "story" with /oː/,

"lorry" with /o/, this shortening may occur:

David G1: ['wɔ̃ɪzə'stɔɪ] /'wo-ize'stori/ "What is the story"

Ross: ['fɔ̃ɾeves] /'foreves/ "four of us"

Clifford: [s'fɔ̃,ðɛn] /s'fo,ðen+/ "I was four then."

/ɔɪ/

Stressed: "boy"/'boɪ/ "toy" /'toɪ/ "oil" /'ɔɪl/

The starting-point for this glide is generally somewhat closer than the norm for /o/ and /o:/, centring on a region between half-open and half-close. The glide is well maintained; no monophthongal variants are found in the material provided by these speakers:

Vivienne: ['bɔ̃ɪ,fɾɛns^s] /'boɪ,frens+/ "boy friends."

Jackie: ['bɔ̃.ɪɾɛns'bɔ̃ɪ] /'boɪənðə'bɔɪ/ "(the) boy and the boy"

Clifford: ['lɪɪʔɪ'tɔ̃ɪ] /'litu'toɪ+/ "little toy."

Tony: [nɛɪz'bɔ̃ɪz] /niɪz'boɪz+/ "and these boys,"

Though the first element of the diphthong appears to maintain its rounding more_{consistently} than /o/, /o:/, yet unrounded versions are still possible:

Vivienne: [sɔ̃ɪ'nɔɪ,zɪɪ] /sɔw'noɪ,zɪɪ+/ "so noisy,"

In /ɔɪl/ the extent of the glide does not seem to be greatly reduced as a result of the vocoid following it:

Clifford: ['ɔ̃ɪlɪv'ɔ̃ɪɪ] /- 'ɔlɪv'ɔɪl+/ "olive oil."

David Gr: [sɪ̥'ɔɪɹ] /səm'ɔɪl-/ "some oil"

though in one instance the vocoidal /l/ is elided as the result of a subsequent vowel:

Clifford: [ɪ̥'ɔɪɹɪn.~t̪ɔ̃,fɪŋz] /'ɔɪɹɪn-t̪ɔ̃,fɪŋz/ "oil on to things"

ii /u/

Stressed: "threepenny" /'frupɛni/ "good" /'gud/ "football"
/'fupbɔw/

Unstressed: "bedroom" /'bedrʊm/ "all right" /u'rɑɪt/ "little"
/'lɪtʊ/

This vowel is between back and central and slightly above half-close. The lips are rounded though, as for /o/, this rounding is not marked, and unrounded variants may occur. Unrounded /u/ is not as common as unrounded allophones of /o/: in a sample of 10 consecutive utterances from each of the 16 speakers in the 9-year old group the ratio of rounded to unrounded allophones of /o/ was 48 to 23 - approximately 2:1; for /u/ the figures were 20 rounded allophones and 4 unrounded allophones - a ratio of 5:1.

Jackie: [sɪ̥'gʊ.t̪ɔ̃] /sɪ̥'gud+/ "it's good."

Jeanette: [ɪ̥2sɪ̥'gʊ:t̪ɔ̃] /ɪ̥tsɪ̥'gud+/ "it's good."

Clifford: [ʌ̥ʊzɪ̥'ɔ̃dɛnɪt.ɪ̥2] /ʌ̥ʊzɪ̥'awdɛnnɪt/ "I was holding it"

Jackie: [kʰɪ̥'plæɪt̪ɔ̃,geve] /ku'plæɪt̪ɔ̃,geve/
"could play together"

As these examples show, /u/ may be lengthened in syllables before /+/.

/u/ as a weak form

/u/ may replace /o/ in a number of common words such as "what", "was", "got":

Russell: [mɪ'leɪzwʊz'mæɪd] /mɪ'leɪzwʊz'mæɪd/

"My legs was made..."

David Gl: [ˈðætʊzmdə'pʰɛɔ] /ˈðætʊzmaɪ'pet+/

"That was my pet."

David Gr: [ˈwʊd.əjə'faɪd] /ˈwʊddəjə'faɪd/ "What do you find...?"

Vivienne: [ˌgʊɪ'fɛ,hɛə] /ˌgʊt^{gut}fe,he+/ "got fair hair."

Some cases of weak /u/ result from the weakening of /oW/ and /uw/:

Philip: [ˌfʊləv'æɪpʰu.nz] /ˌfʊləv'æɪpʊnz+/

"full of acorns(sic)."

David Gr: [ˈlɪɪv,wʌn] /ˈlɪtʊ,wʌn/ "little one"

Jenny: [dʒjʊ,wɔɪ'tɪle,vɪʒən] /dʒjʊ,wɔɪ'tele,vɪʒən+/

"Do you watch television?"

Jenny: [ˈbɛdʒʊm] /ˈbedrʊm/ "bedroom"

"Room" alone usually takes the vowel, /uw/:

Teresa: [ˈɪnɔ.ˈwɔu] /ˈɪnə:'wuw+/ "in her room."

but in compounds it has a short vowel, one of the weak forms /ə/ or /u/: thus "classroom" /ˈkla:srɛm/, /ˈkla:srʊm/; "bedroom"

/'bedrəm/, /'bedrum/.

In other places too, /u/ and /ə/ alternate as weak forms: /u/ replaces the more common /ə/ in

Philip: ['dɪfʊ?]/'dɪfrʊt/ "different"

David Gr: ['rɒm.ʊ'kʰændo]/'rɒmmu'kændow+/ "roman candle."

" : [wɪfʊ'go?]/wɪfʊ'got/ "we forgot"

Ross: [ʊy:ædən'æɪk^aʊm,fai?]/ʊmwɪædən'æɪkʊm,fajt+/ "and we had an acorn-fight."

David Gl: ['plæɪwmɪ'mæɪts]/'plæɪjʊmɪ'mæɪts+/ "Play with my mates."

The influence of a voiceless fortis contoid on /u/ may in rapid speech give it contoidal features, such as friction or voicelessness; when it may be considered as consonantal /w/:

Vivienne: [tm:'dɪmæ?,skɔ]/twə'dɪfwet,skow+/

"to a different school."

" : [tmə'raŋ:koo]/twə'raŋ-kow+/ "to her uncle."

/uw/

Stressed: "move" /'muwv/"two", "too" /'tuw/"newspaper" /'nuwzpeɪpə/

Unstressed: "January" /'dʒənjuw,eri/ "too fast" /tuw'fɑ:s/

/uw/

This vowel has a number of different realizations. Most commonly it is a glide from the central region towards a position closer

than /u/, almost fully close but more central than back. Rounding is moderate or slight, and usually progressive - [əū], [əu], [yū]:

- Jackie: [bāðə'ləu?p^h] /bajðə'luwp+/ "by the loop."
 Ross: ['k^xæp'dəūɪ?] /'kæn'duwit/ "They can do it"
 Philip: [t^səu'ma.n?s] /,tuw'mants+/ "two months"
 Jeanette: ['wʊ?jūj'æbm] /'wutjuw'æbəm/ "What you having?"

Other allophones may be monophthongal, in the region of the end-point of the glide, and either rounded or unrounded - [ü•], [y], [ɤ:], [ɤ:] and so on:

- Philip: [mɔ.t^sə'dm:] /mo:tə'duw+/ "more to do."
 Jenny: [fɹ̥w̥ðə'wudz] /fruwðə'wudz/ "through the woods"
 Jackie: [t^sɤ'boɪs] /tuw'bojs+/ "two boys."
 Vivienne: [t^su•'dæɪndʒəs] /tuw'dæjndrəs/ "too dangerous"

There are glides from central to front of central, half-close or closer, with progressive lip-rounding - [əy], [əɤ], [əø]

- Teresa: [wɔ?fəu,ðəɤ,læɪ?] /wot'fuw,ðɤuw,lajk+/

"What food do you like?"

- Clifford: ['səøzən] /suwzən/ "Susan"
 Kathleen: [t^səy'læɪ?] /,tuw'læjt+/ "too late."
 Jeanette: [t^səø'p^hæ:n.s] /,tuw'pæ:ns+/ "two pounds."

A fourth possibility is one of rounded monophthongal allophones in this front of central half-close region - [y:], [ɤ:], [ø•]:

Ross: [[əgʊb'my:d] /əgʊb'muɪd+/ "a good mood."

Jenny: ['lʌɪ?kdʒ·ɪn] / 'lɑjkdʊɪn/ "like doing..."

DavidGl: ['ʒ·stəplæɪ'gæɪmz] / 'uɪstəplæj'gæɪmz/
"used to play games"

In syllables before /+/ the starting-point of the glides, both to back and front centralized positions, may be fronted and lowered:

Jeanette: [,sʊən] / ,suɪn+/ soon.

" : [wɛɪ'æf·t ədʌə] / wɪj'æfttə,dʊɪ+/
"... we have to do."

In most cases where /uɪ/ is followed by another vowel a link between two vocalic phonemes is provided by labial rounding at the end of the glide in /uɪ/:

Philip: [nɛʔs'dʒetʊ",as] / nets'do:tʊw,as/
"next door to us"

Diane: ['genəʊ'wæpʰən] / 'genuɪw'æpən+/ "going to happen."

Jenny: ['dʒ·ɛnɪ,fɪŋʔ] / 'duɪwɪnɪ,fɪŋk/ "do anything"

Vivienne: [tʰə'wɛʔks] / tʊw'eks+/ "2X."

Where /uɪ/ has an unrounded allophone this link may not be present; the distinctive feature of the vowel may then be its closeness, or else it may be coalesced with a following vowel:

John: ['tʰwɛʔks] / 'tʊweks+/ "2X"

Jenny: [,də:ʔðə,wɛɪ'kʰ·ɛ·nɪʔ] / ,də:tðə,wɪj'kɛnd+/
"do at the week-end."

In the word "you" are found forms with /uw/, /u/, /ə/ and /i/, where /j/ has produced fronting and unrounding of the vowel:

Diane: [jəu'sɛd] /juw'sɛd/ "you said"

Clifford: [jʊ'æyt'ə] /ju'ævtə/ "you have to"

Teresa: ['dɪnʔjə'æv] /'dɪntjə-'æv/ "Didn't you have...?"

Jenny: [,tseɪ jə] /,tuwje+/ "to you."

Jackie: [jɪgeɪʔ] /jɪget/ "You get..."

Vivienne: [ɪkʰʌnʔ'ɛ:] /jɪkɑ:nt'i:/ "you can't hear"

xxv /ow/

Stressed: "salt", "sort" /'sɔwt/ "full", "fool", "fall" /'fɔw/
"wardrobe" /'wɔwd-rəwb/

Unstressed: "hospital" /'ɒspɪtɔw/ "altogether" /ɔwtə'geve/

/ow/ is distinguished from /uw/ and /u/ in the back half-close to close area by an almost fully back position in the end-point of its diphthongal allophones and in its monophthongal allophones. When a variant of /ow/ has lip-rounding it may be more pronounced than for other rounding glides such as /uw/, /əw/. Unrounded monophthongs or glides are however not uncommon. Monophthongs for /ow/ are at the back half-close position:

David Gr: ['fʊʔbɔ̌.wɪb'boɪz] /'fupbowwɪb'boɪz+/ "football with boys."

Jenny: ['ɛvveðə'boɪd] /'əwveðə'bowd/ "over the board"

Jenny: [tʰʌkʰɪn] /tʰowkɪn+/ "talking"

Jenny: [ɪʰ ʔəʔəs] /ɪ'towtəs/ "tortoise"

Monophthongs in /ow/ are mainly in the area which is the endpoint for the diphthongal allophones. More open variants do occur, but are rare. It is the writer's impression that short monophthongal allophones in unstressed syllables tend to be as close and retracted as those in stressed syllables, even though this is contrary to the pattern of behaviour of all other vowels in unstressed syllables. Again, rounded and unrounded variants are found. However, in all allophones of /ow/, where rounding does occur and is unconditioned by neighbouring phonemes, it is more pronounced than in other vowels such as /uw/, /o:/:

John: [mæʔ'dɪŋɡ.ɔ̹] /mæt'donowd+/ "Macdonald."

Ross: [ɪ'aveɪ'pʰeɪpʰɔ̹.] /ɪ'aveɪ'pijpow/ "other people"

Tony: [ɪ'wɪ.] /ɪ'wow/ "Well..."

Jeanette: [ɪ'lɪʔrɪ'bɪɔ̹,ðə] /ɪ'lɪtowɪ'braʔðə+/ "little brother."

Philip: [ɪ'ɔ̹.wæɪz] /ɪ'owwæjz/ "always"

Distribution of /ow/

/ow/ occurs in closed syllables where it is historically a result of a / V + l / sequence, as in "talk", "walk", "salt".

It also occurs in words with no association with /l/, such as "short", "cause", "sauce", "lawn". In these 'non-l' words /ow/ may be regarded as almost mutually exclusive with /o:/, since

/o:/ does not occur in closed syllables except in a few items formed by the addition of a morphemic ending to an open syllable - "yourn", "yours", "drawed", "floors" - while /ow/ does not occur in open syllables outside of those cases where it results from / V + l /.

Word-final /ow/ and /owl/

Word-final /ow/ may be followed by /l/. Before open and external juncture and before a consonant this will be a velarized lateral - [ɫ]. This is relatively rare in mature Cockney, except in very careful speech. Before another vowel the /l/ will be unvelarized as a rule. In both these contexts it is possible and usual for there to be no /l/ in Cockney, so that /ow/ may be in close juncture with a following vowel:

John: [ˈpɔʊɫ] w/ˈpowl+/ "Paul."

Steven II: [ˈfɔʊɫdˈæ.ə] /ˈfowldˈæ:t+/ "falled out"
(5,5)

Jenny: [ɔʊɫəˈfɛ:z] /owləˈfɛ:z/ "all her furs"

Terry: [ˈðætsɔʊˈlɪdʒz] /ˈðætsowˈlɪdʒz+/

"That's all he does."

Clifford: [ˈɔʊɪzˈfaɪwɜks] /+ˈowɪzˈfaɪwɜks/

"All his fireworks"

David Gr: [ˈpɪtəˈbɔʊp] /ˈpɪtəˈbowap+/ "pick the ball up."

Inter-vocalic velarized /l/ is exceptional:

Teresa: [ˌɔʊɫəˈtʰɪm] /,owləˈtʰɪm+/ "all the time."

/ow/ and /əl/

Word-final /ow/ may alternate with syllabic /l/ - [ɫ] - which is expressed phonemically as /əl/ :

- Jackie: ['ʔaŋ.kɫs] /+ 'aŋkəls/ "uncle's"
2nd : ['nɔkŋ'skɫɫ] /'nɔkəŋ'skɪtəl/ "knocking skittle(s)"
Vivienne: [ə 'ʔaŋɪ.kʰoo] /ə 'ʔaŋ-,kɔw/ "her uncle."
Jackie: ['skɛʔoos] /'skɛtɔws/ "skittles"

Alternative Pronunciations involving /ow/

Certain words which have /ow/ before /+/, /-/, or a consonant may have a phonological form with a vowel other than /ow/ followed by [ɫ] in this position, and with a vowel other than /ow/ followed by clear /l/ immediately before another vowel. There are unfortunately not many examples of this in the recordings made at the school, but we may exemplify with the case of "jewels", which is sometimes heard in the form /'dʒɔwz/, and also recorded in the form /'dʒɔwɫz/:

- Debra G: ['kɹɔn 'dʒɔwɫz] /'kræ:n 'dʒɔwɫz+/ "Crown Jewels."

We may cite also the case of "foolish", with /uw/-/'fuwɫɪʃ/ - and the form "fool" - /'fow/; similarly with the name "Julie" /'dʒuɫɪj/, which has a shortened form /'dʒɔwz/ "Jules". "Full", which has the form /fow/ before /+/, /-/, and consonants, takes the form /ful/ before vowels:

- John: [fulə'wudʰ] /fulə'wud+/ "full of wood."

5.1 Consonants

24 consonantal phonemes are classified as follows:

Plosives

/p, b, t, d, k, g/

Fricatives

/f, v, θ, ð, s, z, ʃ, ʒ, h/

Nasals

/m, n, ŋ/

Liquids

/l, r/

Semivowels

/w, j/

Affricates

/tʃ, dʒ/

The consonants may be further classified according to their place of articulation:

	labial/ labio- dental	dental	alveo- lar	palatal/ palato- alveolar	velar	glottal
plosive	p, b		t, d		k, g	(ʔ)
fricative	f, v	θ, ð	s, z	ʃ, ʒ		h
nasal	m		n		ŋ	
liquid	r (v)		r (ɹ) l		l (ɫ)	
semivowel	w			j	(w)	
affricate			tʃ, dʒ			

5.2 Syllabic Expression

Before an account of the consonantal phonemes is undertaken, some mention should be made of a characteristic of rapid, informal speech which can best be described as syllabic expression. Syllables in unstressed, non-prominent positions have a tendency to be elided or to coalesce with other syllables. In some cases, however, the presence of such a syllable may be expressed by characteristic features of other segments, which take on syllabic function. Almost all the consonants, with the possible exception of the liquids ^{/r/}_l, are liable to take on syllabic function; vowels too may have syllabic function in certain circumstances.

Syllabic expression may be of two main types: 1) Reduction or omission of the weak vowel 2) Lengthening of a contoidal or vocoidal segment.

- 1) When a weak vowel is omitted a contoidal segment has syllabic function. The contoid is usually one with a continuant articulation - fricative or nasal;

Kathleen: [fç'gAʔə'bja,vä] /fjə'gotə'bra,vət/

"Have you got a brother?"

" 1. [f'gA2] /fə'got/ "Forgot..."

Dawn P: [ʃesɪd'neɪ] /ʃesɪd'neɪ/ "She said 'No...'"

Teresa: ['pʰä:dn] /'pa:dn+/ "Pardon?"

David Gr: ['levm'vɔ,k^xi.2s]/'levəm'ro,kits+/ "eleven rockets."

Vivienne: [nʔ'ma.ʔɥ] /nət'maɥ/ "Not much"

though plosives may also have this function – even the glottal plosive[ʔ] in utterance-initial contexts:

Diane: ['ðk,dəɣ'kɥɔ] /'aɪkə,duw'krow+/ "I can do crawl."

Vivienne: [ɿad'nɐv] /,aɪdə'nɐw+/ "I don't know."

Jackie: [ʔ'nɛʃ] /+ə'nɐw/ "You know..."

Tony S: [ʔ'nɛzə'hələi,fənʔ] /ə'nɛzə'heliɟ,fənt+/

"And there's a helephant."

Syllabic semivowels have vocoidal articulation, of the nature of a close front unrounded or back rounded vocoid at the position normally associated with /j/ and /w/, but without the rapid glide to a following vocoid that usually characterizes the semivowels:

Ross: [ʉ,t^saɪɟ] /wu,tajd/ "We tied..."

Vivienne: [ɿ'kʰɛn] /ɟi'kæn+/ "You can!"

- 11) When a segment is lengthened the rhythm of the original 'intended' utterance is preserved, unlike the previously discussed syllabic device, which involves a reduction in length. Again, it is continuant consonants which are mainly associated with this phenomenon:

Ross: ['pʰɛis:əv'strɪŋ] /'pijsəsəv'strɪŋ/

"pieces of string"

Kathleen M: ['wɛŋ;'gɒn] /'wenəŋ'gɒn/ "went and gone"
 (6,6)
 John: ['ɛʒ;'we] /'evə,'we+ / "everywhere."
 Philip:b ['a:f;'kʁɛn] /'a:fə'kræ:n/ "Half-a-crown"
 Jeanette: [ɪn.'nɜːsɹɪ] /ɪnnə'nɜːsɹɪ+/ "in the Nursery."

Plosives may also have this function: the lengthening of these segments involves a sustainment of the 'stop' or 'hold' stage of the plosive articulation:

Clifford: ['ʃkɜːpə'dæːnnə'steːz+ /'ska:pə'dæ:nnə'ste:z+/
 "scarper down the stairs."

Russell: [æʔ.'pʰæɪʔbə] /æʔə'pæjpə:/ "out of paper."

Diane: [lɑɪʔ.'seɪəm] /lɑjtə'siʒəm/ "like to see them"

Vowels may also be lengthened in this type of function, when their length expresses the presence of another vowel. The vocoid may be uninterrupted, or may have two rhythmic 'crests' divided by a rhythmic 'trough', even though the tongue maintains the same articulatory position throughout:

Ross: ['naɪ.'sɪʔks] /'naɪnən'siks+/ "nine and six."

John: ['pleɪ.vɪlɪʔvʌvə] /'plæjɪvɪj'litu'brəvə/
 "Play with my little brother"

Jackie: [ðə'gɛɪ̯n:'gɛɪ] /ðə'gel-unnə'gel-/
 "the girl and the girl"

A long /ə/ caused by this type of lengthening may be regarded as a coalesced form producing /əː/:

Jenny: [ˌdəːʔðə,wɛɪ'kʰɛ.nɪ] /ˌdəːtðə,wɪj'kend+/
 "do at the week-end."

Paul H: [,fpe: 'dA.2k^x 't^həno] / ,fre: 'da:k- 'təno+/
 (6,11) "through a dark tunnel."

Similarly a long /i/, expression of /i/+e/, is treated as /i:/:

Jeanette: [wən² .t 'sɜ: .pik^hɜj] / wenttə 'si:piku/
 "went to see her because..."

iii) Other types of syllabic expression are found. These include the aspirated release of fortis plosives:

Carl: ['lukx.o. 'dæ²] / 'lukə-ow 'ðæt+ / "Look at all that!"
 (5,10)

or the release of ejective plosives:

Dawn P: ['mæɪd² ,2ə.2əy] / 'mæjdət,æ:təy/ "made it out of..."
 (6,6)

An ingressive voiceless fricative, or drawing in of breath, [ɳ], usually non-phonemic, is sometimes found between syllables and is thus a marker of open juncture:

Carol: [wans ɳ 'æɪl;ən] / wans- 'ællən+ / "One's Alan."
 (5,10)

One young speaker also uses it as the realization of /ə/ - in other words, with syllabic function:

Paul Sh: [t⁶ v'fɛtʃə 'p^hæ.ɳ 'wɔ: 't⁵ə] / tu'fɛtʃə 'pæə 'wɔw-tə+/
 (5,5) "to fetch a pail of water."

Another older speaker uses a silent stress [.] or pause with this function:

Elaine: ['plæɪd² .fɪ 'fɪŋz] / 'plæjdəfɪ 'fɪŋz+/
 "played with my things."

5.3 Plosives

1 Initial, Medial and Final Plosives

Fortis plosives are generally aspirated lightly - $[p^{\cdot}, t^{\cdot}, k^{\cdot}]$ - or more heavily - $[p^h, t^h, k^h]$, or may be affricated - $[p^{\bar{\phi}}, t^s, k^x]$. Lightly aspirated /t/ is in fact rare, and $[t^s]$ occurs ~~somewhat~~ more frequently than $[t^h]$. $[p^h]$ is much more common than $[p^{\bar{\phi}}]$, and in a sample of 10 consecutive utterances from each of the 16 9-year old speakers the affricated form occurred only in syllable-final position. Affricated /k/ was slightly more common than the aspirated form in the same sample*. Aspirated allophones of all three fortis plosives appear to be associated mainly with initial and medial positions. Final plosives (where they are not unreleased as a result of a following consonant) seem to lend themselves most readily to affrication. This may be because affrication is associated with a relatively slow release of the plosive, which produces homorganic friction, and the tempo of utterance may be slower on final than on initial or medial consonants, and will be particularly slow on utterance-final consonants. The higher proportion of affricated plosives used by girls in medial position in Table 2A may also be a reflection of girls' habit of protracting some of their utterances (cf. 1.3; above). However, affricated /k/ and /t/ seem to occur freely in all positions, so that this may be merely a feature of the female variant of the dialect.

* See Table 2, p 275.

Lenis plosives /b,d,g/ are not affricated to the same extent as their fortis counterparts, though /d/ has affricated allophones much more frequently than /b,g/ (see Table 3). They may be devoiced in syllable-initial and syllable-final position, particularly before or after /b,+/ and /-/. Again, this feature is displayed by /d/ to a greater extent than the other two lenis plosives:

- Kathleen: ['bädʒi,ga:d̥] / 'badri,ga:d+/ "Budgerigar."
 Jenny: ['læɪd̥,seɪ̯h] / 'læjdi,seɪ-/ "(the) lady said,"
 Ross: [,naɪm'boʊh] / ,naɪm'bob+/ "nine bob."
 Jenny: [æd̥ə'doʊg̥] / ædə'dog+/ "Had a dog."

Devoicing and affrication of /d/ is found more frequently in girls' than boys' speech (see 5.3v below).

In final position fortis plosives are almost invariably glottalized. /p,k,t/ may all be realized as [ʔ] in this position:

- Tony: [t̥ə'fe,lɪ·2s] / t̥ə'fe,lɪps+/ "to Philip's."
 Clifford: [a'lɛʔɪʔ] / aɹ'litɪt-/ "I lit it"
 Jenny: [ɛnɪ,fɪŋʔ] / enɪ,fɪŋk/ "anything"

This is much more common with /t/ than with /p/ or /k/. A sample of 10 consecutive utterances from each of the speakers in this group gave the ratios of [ʔ] to other allophones of the three plosives as 20:1 for /t/, 1:2 for /p/, and 1:1 for

Table 2. Aspiration and Affrication of Fortis Plosives in Initial, Medial and Final Positions, in a Sample of 9-year old Speech

	INITIAL	MEDIAL	FINAL
[p ^o],[p ^h]	7	1	-
[p ^ɸ]	-	-	3
[t ^o],[t ^h]	4	4	-
[t ^s]	11	4	2
[k ^o],[k ^h]	8	5	-
[k ^x]	11	5	2

Table 2A. Total Occurrences of Aspirated and Affricated /k/ in Medial Position Among 9-year old Boys and Girls

	BOYS	GIRLS
[k ^o],[k ^h]	19	11
[k ^x]	11	32

Table 3. Affrication of Lenis Plosives in Initial, Medial and Final Positions, in a Sample of 9-year old Speech.

	INITIAL	MEDIAL	FINAL
[d]	30	9	6
[d ^z]	4	5	5
[d ^(s)]	2	3	11
[b]	12	8	2
[b ^ɸ]	2	-	-
[ɸ]	1	-	1
[g]	5	2	1
[g ^ɸ]	1	-	-
[g ^(x)]	-	-	-

Such allophones, which do not occur with great frequency, are more common in /p/ and /k/ than in /t/. The example given above (Dawn P) is the only instance of medial pre-glottalized /t/ in the whole corpus. /t/ is very often realized medially as [ʔ], or, somewhat more rarely, as the voiced alveolar flap [ɾ]:

Elaine: ['stA.ʔədʔ] /'sta:təd-/ "started"

Tony: [wɪ.ˈgʌɾɪ] /wɪ'gotɪ/ "we got it"

Summarizing, then:

Initial plosives /p/ is aspirated; /t,k/ aspirated or affricated. Lenis plosives are sometimes affricated, /d/ especially.

Medial plosives /p/ is aspirated; /t,k/ aspirated or affricated. /p,k/ may have glottalized lenis allophones; /t/ may have as allophones the glottal stop or the voiced alveolar flap. Lenis plosives are less likely to be devoiced or affricated in this position.

Final plosives /p,t,k/ may all be realized as [ʔ], or may have double closure, both oral and glottal, in which case the oral closure may be held, or released with homorganic affrication. /d/ may be devoiced and affricated in this position, particularly in girls' speech.

11 Clusters with plosives

a) Plosive + Plosive.

In clusters of two fortis plosives - /pp,pt,tt,tp,kp,kk/ and so on - the first element is very often realized as [ʔ].

/t/ is almost invariably so realized; /p/ or /k/ may have a distinctive bilabial or velar articulation in careful, perhaps only formal speech:

Kathleen: [ˈɹɪftʰapʰ] /ˈriptap/ "ripped up..."

Jenny: [ˌnɔʔktʰəmˈɔf.] /ˌnoktəmˈɔf-/ "knocked them off"

In these cases the first plosive is glottalized but the oral articulation is unreleased. In order to make clear the difference between these cases and utterances where the first plosive in such a cluster is realized as [ʔ], the convention is adopted of expressing a glottal plosive in the first position in one of these clusters as an allophone of the second, oral articulated plosive. Thus inter-vocalic [ʔpʰ] is an expression of /pp/, [ʔtʰ, ʔtʰ] are expressions of /tt/, and [ʔkʰ, ʔkʰ] expressions of /kk/. If, however, a nasal plosive immediately precedes [ʔ], then this glottal plosive is regarded as an allophone of the fortis plosive at the same place of articulation as the nasal:

David Gl: [dʒam²ˈtʰapʰ] /dʒampˈtap/ "jumped up..."

Jenny: [ɛnɪˌfɪŋʔˈtʰ.jə] /ɛniˌfɪŋkˈtəjə+/
"anything to you?"

When the phonemic transcription reads /pt/, /kt/, /pk/ and so on we take this to be an indication that the utterance so described is marked by two contrasting plosive articulations in sequence.

Fortis plosives before lenis plosives behave in the same way, so that in /td/, /pb/, /kg/ the first element is realized as [2]:

John: [,əʋvəðə' bæ2, dʒ] / ,əʋvəðə' bæ2, de: + /

"over the back there."

Jeanette: ['skɹæ2, bʊ²kˣ] / 'skræp, buk+ / "Scrap-book."

Assimilation of Lenis plosives

In clusters of Lenis plosive + Plosive there is a tendency for the first item to be assimilated to the second in the feature of place of articulation. /d/ appears to be very much more ready to assimilate to /b/ and /g/ than either of these are to assimilate to /d/, though they assimilate to each other readily enough. Thus we find /gg/, /gk/ and /bb/, /bp/, but /dd/ and /dt/ are rare, except where /d/ is present in the morphemic form of the first word. This is a feature of rapid, informal speech, and seems to be resisted in more careful styles:

John: ['bɪb' bɒm, faɪ] / 'bib' bɒm, faɪ + / "big bonfire."

David Gr ['stæmfəb' bɪdʒ] / 'stæmfəb' brɪdʒ + / "Stamford Bridge."

Kathleen: [mɑˈdʒæŋkɪəɪnzɪɪ?] /majˈdægklɪjnzɪɪ?+/

"My Dad cleans it."

David Gr: ['dæɪvɪgˈgrɪfɪn.] /ˈdæjvɪgˈgrɪfɪn+/-

"David Griffen."

b) Fricative + Plosive

When voiceless plosives are preceded by a fortis fricative with which they are in close juncture the plosive is generally unaspirated. Only if the cluster is utterance-final may the plosive have some of the aspirated release associated with a single voiceless plosive. This devoicing effect may also follow the voiced affricate /tʃ/:

David Gl: [pəˈskɛɪtʃ] /pəˈskɛtɪʃ-/ "Spaghetti,"

Clifford: ['kræʃtˈəʊmɪˈdɪʃ] /ˈkræʃtˈəʊmɪˈdɪʃ+/-

"Crashed all my teeth."

Jeanette: ['ʃɒpˈɪn,lɪs.tʰ] /ˈʃɒpɪn,lɪst+/- "shopping list."

Jenny: [bɪˈwɪtʃ.t̚ænd] /bɪˈwɪtʃ.t̚ænd+/- "Bewitched", and..."

c) Plosive + Continuant

Where a plosive is followed by a continuant such as /l,r,w,j / it is usual for the continuant to be devoiced and possibly fricative if the plosive is fortis, and if the two are in close juncture. Thus /pr/ - [pɹ̥]; /pl/ - [pɫ̥]; /kw/ - [kʷ̥] or [kʷ̥], /pj/ - [pɕ̥], and so on. This can be regarded as the

aspirated release of the plosive, which is manifest in the de-voicing of the following segment:

Vivienne: [tæ'ɹaŋ:,k̥oo] /twə'raŋ-,kow+/ "to her uncle."

Elaine: ['kɛɛ?'ʃɛoz] /'klek'ʃelz+/ "Collect shells."

Kathleen: ['pɛænəs] /'pɛænəs+/ "pianos."

There are however some realizations of clusters with /r/ and /l/ in which the continuant is not a voiceless fricative. /pr/ and /pl/, for example, may have a co-articulated allophone, in which the tongue takes up the position for [l] or [ɹ] while the bilabial closure is sustained, and moves away from this position at almost the same time, or immediately after, the bilabial closure is released:

Russell: ['plæɹ,t̪ʰaɪ] /'plæj,tajm+/ "Play-time."

Jackie: ['pɹɛvɹɹæm] /'pɹɛvɹæm/ "programme"

The closure is released with only slight aspiration, and the effect of the alveolar articulation for the continuant is heard in the transition to the following vocoid. Similar co-articulations have been recorded for /br/ and /kl/.

Presumably - though no examples are found in the present study - they are also a possibility with /bl/, /kr/, /gr/, /gl/:

Jackie: ['brævə] /'brævə/ "brother"

Teresa: [kl̪ä.s't̪həu.] /kla:s'tuw+/ "Class 2."

.11 Bilabial Plosives /p/./b/

/p/; "paper"/'pæjpə/ "philip"/'filip/ "Threepenny"/'frupənɪj/
 /b/: "Bob-a-job"/'bɒbə'ɔb/ "hobby" /'ɒbɪj/"brother"/'brʌvə /

The closure for /p/ and /b/ is effected at the lips. Voicing for /b/ commences during the release stage, while for /p/ this stage is marked by a more energetic release, accompanied by marked aspiration, and perhaps by affrication in utterance-final /p/. If the plosives are followed by a vowel or one of the continuants /r,l,j,w/ the tongue assumes the position associated with their articulation during the closure or the release stage. The articulation of the continuant may be carried out simultaneously with that of the plosive, as we have seen above, or it may be commenced during the release stage. If a rounded vowel or /w/, and occasionally /r/, follows, the lips may be pouted or rounded:

Teresa: ['pɪtɪʃəs.] /'pɪjtə-/ "Peter,"
 Diane: [bɪg'bɒksɪz] /bɪg'bɒksɪz+/ "big boxes."
 Ross: ['vɛrɪ'pʊə.] /'verɪ'pɒ+/ "Very poor."
 Teresa: ['bʊːnɪn'buʃ.] /'bɜːnɪn'buʃ-/ "this burning bush"

A single labialized or rounded segment may be a realization of the clusters /br/,/pr/,/bw/,/pw/:

Jenny: ['læpˡ,pʊmən] /'læp,pwʊmən/ "Lapp-woman"
 Jeanette: ['brɛs,streɪˡkʰ] /'bres,streɪwk+/ "breast-stroke."

Ross: ['speɪbæɪ] /'spiɪbwæɪ/ "Speedway"

Labio-dental variants - [β], [b] - are found before other labio-dental articulations such as [m], [f]:

Karen*: ['lɪʔʊ'sæmʔ βfed] /'lɪtu'sæmpfed+/
 (9,2) "Little Sampford."

Diane: ['wʊʔʊ'æbm] /'wʊtjuw'æbm/ "What you having..?"

Both /p/ and /b/ may have fricative allophones, though these are not common - [ɸ], [β]. In final position /p/ is distinguished as a fortis plosive by glottalization of the fricative:

Jackie: ['skɪɸɪ] /'skipɪn/ "skipping"

Diane: [ɪn'tʰɔʔɸ] /on'top+/ "on top."

David Gr [mʌ.βæ.f,dæɪ] /maj'be:f,dæɪ/ "my birthday"

John: ['wɔdʰ,ɹæβ] /'wɔwd-ræwb+/ "wardrobe,"

/b/ may also have allophones that are voiced frictionless continuants - [β]:

Philip: [βætʰ'hɪə] /bet-'hi:-/ "but here,"

Teresa: ['spɜs.βeɪ'gɔdʰ] /'spɜwsəbiɪ'gɔd+/
 "supposed to be God."

In one place /pl/ is realized as [ɸ], the continuant feature of /l/ combining in one segment with the voiceless and bilabial features of /p/:

Elaine: [ɸæɪ] /'plæɪ+/

* See Appendix A

Alternation of /p/ and /b/

The distinctive features of /p/ in this phonemic system are its fortis nature, its aspiration, and glottalization combined with possible affrication in final position. Segments which lack one or more of these features become less distinct from /b/, as in the case of unaspirated [p]:

David G1: [pə'skɛʔəɪ] /pə'sketɪj-/ "Spaghetti,"

or unglottalized final /p/:

Kathleen: ['ɹɪpt̚ap] /'rɪptap/ "ripped up..."

and especially the voiced unaspirated bilabial plosive, which must be regarded as /b/:

Russell: ['ɛbstɛ:z] /'abste:z/ "upstairs"

John: [ˈtʃɔ̃bʔɪˈdʒɛ̃.n] /ˈtʃɔbitˈdæ:n+/ "chop it down."

/b/ is distinguished partly by its voicing, partly by its lenis nature, which makes it less likely to be aspirated. In initial position /b/ may be devoiced:

Diane: [p̥ɪ'fɔ:] /bɪ'fo:/ "before"

Jeanette: [p̥ɪ'kʊʃɪs] /b(p)ɪ'kuʃɪs/ "because she's..."

If aspiration is combined with voicelessness in this position then we may talk of substitution of /p/:

Stephen G: [ʃɪ'kɪʃdɛ'p̥hæɪbɛ] /ʃɪ'gɪsdɛ'pæjbi/
(6,10)

"she gives the baby..."

These alternations are relatively rare in mature speech.

Assimilation to /b/

/d/ is very easily assimilated to, /b/ under the influence of not only /p/, /b/, but also the bilabials /w/ and /m/:

Vivienne: [ʔAɪfəʊd², rəʊb'beɪ] /+ʔaɪfəʊd, rəʊb'beɪ/

"Old Ford Road, Bow,"

Clifford: [ɪɪz'dæb'pʰʊ?+m] /ɪɪz'dæb'putɪm/ "His Dad put him"

Ross: [ʔspeɪbəɪ] /ʔspiɪbweɪ/ "Speedway".

" : [əɡwɒ'mɪːd] /əɡwɒ'muɪd+/ "A good mood."

Similarly /v/ may be assimilated to /b/ - an assimilation of manner more than place:

David Gr: [wɪb'boɪz] /wɪb'boɪz/ "with boys"

Ross: [ʰAbːɪn'pleɪn] /+aɪbbɪn'pleɪn/ "I've been playing"

Diane: [ʔwʊ?jʊ'æbəm] /ʔwʊtjuw'æbəm/ "What you having..?"

Fortis Alveolar Plosive /t/

"potatoes" /'tæɪtəz/ "mattress" /'mættrɪs/ "tea", "T." /'tiː/

"Art" /'ɑːt/ "had to" /'ætə/

For the most common realization of /t/ the tip and blade of the tongue form a closure against the alveolar ridge behind the upper teeth, while the rim of the tongue is pressed against the upper back teeth to prevent any lateral escape of air. Aspiration or affrication is noticeable in the release of the plosive - [t^h] or [tʰ]. Heavily aspirated plosives -

[th] - may be the product of a very emphatic style of speech:

Jackie: ['brævəɾəv'thɛ'n] /'brævəɾəv'ten+/
"brother of ten."

or of a speaker's trying to articulate under the pressure of suppressed laughter:

Clifford: [ɪ'theɪf] /ɪ'tɪjf/ "my teeth..."

Affrication may be so marked that both plosive and fricative elements are equally prominent - [tʃ] - or the fricative is more prominent than the plosive element - [tʃ]. This occurs mainly in initial positions, occasionally medially, but not in final position, where it is inhibited by a possible contrast of /t/ with /tʃ/ :

Ross: ['tʃɛə'mætʃɛsɪz] /'tʃuw'mættɾɛsɪz/
"two mattresses"

Jackie: [tʃɛ'gɛfɛ] /tɛ'gɛfɛ+/"together."

Jenny: [ɪ'tʃɛɪjɛ] /ɪ,tʃwɛɪ+/"tɔ ypu."

Vivienne: ['wɛntɔntɛ'sam] /'wentɔntɛ'sam/
"Went onto some.."

It is probably because of the existence of an alveolar fricative /s/ that there are no fricative allophones found in /t/, unlike /p/ and /k/, which are not in contrast with bilabial or velar fricatives.

Slight changes in the position of the tongue in the articulation of /t/ may be reflected in varieties of affricated release.

These may be slightly retroflex - [t^ɐ], slightly palato-alveolar - [tʰ], or alveolar, but with spread-tongue articulation and slight palatalization - [tʰ^ɪ] :

Teresa: [ʰəʊtʰ^ɪ] /'hot+/ "hot."

Clifford: [nəʋ'tɪj^ɪ.i] /nəw'tɪj+/ "no tea."

Ross: [tʰj.ʰf^ɪ.s] /tuw'fa:s/ "too fast"

John: [ʰtʰ^ɪ.ɪd^ɪs] /'tuw d^ɪjs+/ "two days."

Dentalized /t/, which may also be palatalized - [t^ɪ]- is found among some speakers:

Jeanette: [ʰt^ɪ.ɛlin'nlai] /'telin'laɪ+/ "telling lie(s)."

Vivienne: [ʰt^ɪɛɪtʰ^ɪ] /'tɪjtʰ^ɪ+/ "teacher."

Elaine: [ʰgam,tʰ^ɪ.mɔ] /'sam,tajms/ "sometimes"

Clifford: [ʰa,tʰ^ɪɛɪjə] /'aɪ,teljə+/ "I tell you."

Other allophones, rare at this age, are retroflex [ɖ] and an alveolo-palatal plosive [ɕ]. For this plosive a comparatively large area of the tongue - the front and part of the blade - is pushed against the back of the alveolar ridge and the hard palate. Acoustically this segment gives the impression of having features of both /t/ and /k/ :

Clifford: [ʰk^ɪamj^ɪʰə'jku] /i'kams tə'sku/ comes to school

David Gr: [ʰt^ɪA.ɕ^həb^ə.ɕ^hɪk^hɪ.2] /'traɪtəb^ə'ræɪkit+/

"try to break it."

Medial /t/ is frequently realized by glottal allophones. These include not only the glottal plosive [ʔ] but also a glottal

continuant [ʔ], in which the closure at the glottis is not complete, so that voicing may be hardly, if at all, interrupted, and also a glottal 'creak' [ʔ]. The creak is produced by rapid vibration not of the vocal cords, but of the glottis, and produces 'creaky voice' (cf. Catford 1964) if sustained through a vocoidal segment. However, creaky voice is usually associated with low pitch in a speaker's voice; these children have relatively high-pitched voices, and the creak has a phonemic function as an inter-vocalic allophone of /t/. A degree of creaky voice can be discerned in vocoids on either side of [ʔ]:

Tony: [ˈgɛʔɔ.fəˈðə] /ˈgetofəˈðə+/ "get off of that?"
 David G1: [ˈtʰæɪʔəz] /ˈtæjtez-/ "taters,"
 Ross: [ˈkʰæʔənəˈmæʔs] /ˈkætənəˈmæ:s+/ "cat and a mouse,"
 Clifford: [ˈlɪʔ,ɪʔ] /ˈlɪt,ɪt/ "lit it"
 Jackie: [ˈlɛʔəʔɪˈʔ.ɔkʰɪ.ʔs] /ˈletofˈfrokɪts+/
 "let off rockets."

It would appear that boys use proportionately more glottal allophones in medial position than girls. In a sample of 10 consecutive utterances from each speaker, it was found that boys had 73 instances of medial [ʔ,ʔ,ʔ] to only 4 instances of [tʰ, tʰ], while for girls the figures were 46 glottal and 14 non-glottal allophones. This represents a ratio of 18:1 for the boys and 3 :1 for the girls. In final position the differences are less great. Boys had 33 glottal and 5

glottalized alveolar allophones in this position, while girls had slightly more glottal allophones - 44, to only 3 glottalized alveolars.

In inter-vocalic position are found voiced alveolar flap allophones of /t/ - [ɾ]. These are relatively rare at this age: it may be that they are associated with informal styles of speech and for that reason do not occur much in the recorded speech of these children. Only three cases of [ɾ] as an allophone of medial /t/ are noted among the 9-year olds: all occur in boys' speech:

Tony: [wɪ.ˈgʌɾɪ] /wɪ(:)ˈgoti+/ "We got it."

Lenis Alveolar Plosive /d/

"dinner" /ˈdɪnə/ "David" /ˈdæjvɪd/ "husband" /ˈʌzbənd/ "garden"
/ˈgɑːdən/ "grandad" /ˈgrændæd/

Articulation of /d/ is as for /t/, but with voicing commencing at the release stage of the plosive. Variants include dentalized [ɾ̪], both in the vicinity of /ð/ and in free variation:

Diane: [stæɾ̪, ðe:] /stæjd, ðe:+/ "stayed there."

Jeanette: [ˈæn: ɾ̪äʋɪn] /ˈændəˈdæjvɪn+/ "and the diving."

" : [ˈdæɾ̪vɪɾ̪s] /ˈdæjvɪd+/ "David."

also palatalized [ɟ], in the vicinity of /j/:

Jenny: [ˈd̪əjə, d̪əʊ] /ˈd̪əjə, duw/ "Do you do...?"

and alveolo-palatal [ɟ], the lenis equivalent of [t̪] :

Ross: [ðær'kʰæp'ɟəʊrɪ?] /ðæj'kæn'duwit/

"They can do it..."

Slighter variations in tongue-position may be reflected in the affricated release, which may be, for example, slightly retroflex - [d̪ʰ] - both before /r/ and in free variation:

Elaine: [v̥iəd̪ʰ'vʌkʰɪʔs.] /riəd-'rɒkɪts-/

"We had rockets,"

Russell: [ɪ'ʔʌv̪d̪ʰ] /+ɪ'awd+/ "old."

Teresa: [wɪd̪ʰəʊ'ɪstɹɪ] /wɪduw'ɪstrij+/ "We do history,"

Voiced frictionless continuants may be found in /d/, though these are not common:

Russell: [ɪ'ʔʌz̪v̪n'ɪnɪʃ] /ɪ'ʔʌj,dəʊn'ɪnəw+/ "I don't know."

/d/ is very often devoiced, mainly in initial and final positions, though also occasionally in medial position and initial position (see Table 3):

Jackie: [əʔ'daɪd̪ʰ] /ət'daɪd+/ "it died,"

Elaine: [ɪ'seɪ,sæɪd̪ʰ] /ɪ'sɪj,sæɪd+/ "sea-side."

Kathleen: [ðə'bɒd̪ʰɪ] /ðə'bɒdɪj/ "the body"

Elaine: [d̪ʰə'ɪnəʊ] /də'ɪnəw+/ "Don't know."

As these examples show, devoiced /d/ is also liable to both aspiration and affrication. It is possible for final /d/ to have progressive devoicing, when the hold stage of the plosive has voicing, the vocal cords continuing to vibrate behind the oral closure until pressure builds up in the chamber behind

this closure. The release of the plosive is, however, unaccompanied by voicing - [d^h]:

Diane: [A'diɪd^h] /aɪ'dɪd+/ "I did."

Where an utterance ends with a vowel followed by /d/ it seems to be a particular tendency of girls' speech to lengthen the vowel and devoice the /d/:

Jackiëte: [k^hə̃.ə̃'gʊ.t^h] /kəsəs'gud+/ "cause it's good."

Jeanette: [s'gʷ:ɔ̃^h] /s'gud+/ "it's good."

Kathleen: ['stəɪvənz'ɹe.jɔ̃^h] /'stɪjvənz'rəwd+/
" (St.) Stephen's Road."

Even the fortis, affricated voiceless plosive [t^h] is regarded as an allophone of /d/, not /t/, in final position, because it does not have the glottalization characteristic of final /t/. In a sample of 20 consecutive utterances from each of the speakers in the 9-year old group the following numbers were found of voiced unaffricated, voiced and affricated, devoiced lenis, devoiced and affricated fortis allophones of /d/:

	Girls	Boys	Total
[d]	23	38	61
[d ^h]	12	5	17
[ɖ], [ɖ ^h]	14	5	19
[t ^h]	4	1	5

It can be seen that girls exceed boys in this sample in both devoicing and affrication of /d/.

Distribution of /t/ and /d/

The salient feature of final /t/ is that it is glottalized; voiceless fortis plosives that are not glottalized are allophones of /d/, as explained above:

Vivienne: [ðə'sɛk^xənt^s] /ðə'sekənd+/ "the second."

Teresa: [ˌtɜː'vʌsbən^tt^s] /-,ə:'rʌsbənt+/ "her husband."

A feature of the dialect is the presence of final /t/ in some words where Standard English has /d/ - "husband"; "cupboard". - /'kʌbət/.

In the negative expressions "wouldn't", "couldn't", "didn't" and so on, medial /d/ is replaced by the glottal allophone of /t/:

Jenny: [dɪtɪn'laɪk^xəm] /dɪtɪn'laɪkəm+/ "didn't like them."

Clifford: ['wʊtənjdə] /'wʊtənjdə+/ "wouldn't you?"

Elaine: [aɪ'kʊtənt] /aɪ'kʊtənt/ "I couldn't"

In inter-vocalic position there is a tendency for voiceless segments to acquire some voicing, or other features of lenis consonants. /t/ may, for example, be unaspirated:

Philip: [nɛt^s'dɒətʊ,ʷʌs] /nɛks'do:tʊ,ʌs/

"next door to us"

and it is in this position that the voiced flap allophone of /t/ - [ɾ] - is found in rapid speech. In common expressions such as "got it", /t/ may be replaced by /d/ in rapid and less careful speech:

Clifford: [dAʔnʔ'gɛdɪʔ] /dəwnt'getit+/ "don't get it."

Jenny: ['gɔdɪʔ'bæʔ] /'godip'bæk/ "got it back"

Jackie: [æɪnʔ'gɔdɪʔ] /æjnt'godit+/ "ain't got it."

Note also:

David G1: [dɪ'ɔspɪ,dɔʔ] /di'ospɪ,dow+/ "the hospital."

Clifford: ['ðomɪ'dʒeɪf] /'owmi'dɪjf/ "all my teeth."

Both /t/ and /d/ are frequently omitted in non-formal speech, particularly in clusters and in word-final positions:

Jeanette: ['dæ:zɡənə] /'dæzɡənə/ "Dad's going to"

Russell: ['kɑ:bɔd²] /'kɑ:bɔwɪ-/ "cardboard"

David Gr: ['kɪʔv̥s] /'kləws+/ "closed."

Clifford: ['fɛwəʔ,nɑ:ɪ] /'fajwət,naj+/ "Firework Night."

John: [ˌɑf'leɪf] /ˌɑ:f'lef+/ "half left."

Conversely, an intrusive /t/ is sometimes encountered in the sequence /ns/:

Jackie: ['stɪvənʔs'ɹe.v̥t^s] /'stivənts'rəwd+/

"(St.) Stephen's Road."

Clifford: ['saɪmən|'ba.ɛn.t s] /sajmən+'ba:nts+/

"Simon, Barnes."

This is presumably analogous with /nts/ in the forms "once" /'wants/; "chance" /'tʃa:nts/; "threepence" /'frupents/.

Velar Plosives /k/. /g/

/k/: "Christmas" /'krisməs/ "anything" /'enɪfɪŋk/ "volcanoes"
/vəw'kæjnəws/

/g/: "guy" /'gaɪ/ "dog" /'dɒg/ "Cadogan" /kə'dɑɡən/

For the velar plosives a closure is formed by the back of the tongue pressing against the velum. The release is aspirated or affricated for /k/, depending on the speed of the release, and accompanied by the onset of voicing for /g/. There is considerable variation in the points of contact of the articulators, varying with the nature of nearby vowels. The plosives may be more fronted before close front vowels - [ɛ̞, ɜ̞] - and more retracted before close back vowels and velarized segments such as dark /ɪ/ - [ɛ̞̠, ɜ̞̠]:

Vivienne: [ˈmɑŋ.ɛ̞ˈɪz] /ˈmɑŋ-kɪz/ "Monkees"
Philip: [ɪʔsˈbɛ̞ɟɪn] /ɪtsˈbɛ̞ɟɪn+ / "it's begging."
Jeanette: [sˈɟʊt̚˥] /sˈɡud+ / "it's good."
Jackie: [ˈʔɑŋ.ɛ̞̠ˈɪz] /-ˈɑŋkəls / "uncle's"

These variations will not, however, be marked in ensuing sections of the thesis, except where they appear to be due to more than contextual conditioning.

Lip-rounding may accompany the plosive articulation, and this lip-rounding may in itself be sufficient to express the presence of a /w/ or a /r/:

Diane: [əʔ'kɹisməs] /æk'krisməs/ "at Christmas"

Like /p/ and /b/, the velar plosives may have fricative allophones:- [x, ɣ] - or a voiced frictionless continuant [ɣ]:

David Gr: [ɪ'sxɔo] /i'skow+/ "in school?"

" : [kʰA-m'ɪb^væɪɪɪ] /ka:m'bræjki+/ "can't break it."

Clifford: [ɣɔʔ'ɪɪb'ɪb^s:nɪ] /got'ɪɪb'be:nt/ "got big burnt..."

" : [ənɪ, ɣə.z] /əni, gəwz/ "and he goes..."

Jenny: [tʰə, xɛ.ən, t^sɛɪ] /tə, gəwən, tel-/
"to go and tell..."

/k/ may have ejective realization in utterance-final position, a very emphatic and final-sounding device:

Clifford: [gɛʔə'stɪ^sɪkʰ] /'getə'stik+/ "get the stick."

Jeanette: ['bæɪ:ʔə'wɛɪɪkʰ] /'bæ:tə'wiɪjk+/ "about a week."

Like /b/ and /d/, /g/ may be devoiced, and this may be accompanied by aspiration or affrication:

Vivienne: ['gənəxævə'dɔ^sgʰ] /'gənəxævə'dog+/
"going to have a dog."

Jenky: [æd^sə'dɔ^sgʰ] /ædə'dog+/ "had a dog,"

Assimilation to /g/

/d/ assimilates to /g/ very readily:

Kathleen: ['d^sægklɪɪnzɪʔ] /'dægklɪɪnzɪt/ "Dad cleans it"

Jenny: ['wɪkʰɪg'gɔblɪnz] /wɪkɪg'gɔblɪnz/ "wicked goblins"

/g/ may assimilate to a following /b/, but not invariably so:

John: ['ɪɪb'ɪbɔm, faɛ] /'ɪɪb'ɪbɔm, faj+/ "big bonfire."

Tony: ['ɪɪg, bɔʔks] /'ɪɪg, bɔks/ "big box."

5.4 Fricatives

1 Labio-dental Fortis Fricative /f/

"cafe" /'kæf/ "fireworks" /'faɪwɜːks/ "have to" /'æftə/ "nothing" /'nʌfɪŋk/

This fricative is produced by friction between the top teeth and the top of the lower lip. Variation in articulation is slight. Rounding and protruding of the lips may take place if /w/ follows, or may be unconditioned by a rounded vowel.

Diane: [pɪ'fɔːwɪ'lɛft] /bɪ'fɔːwɪ'lɛft+/

"before we left."

Elaine: [ɪ'wɪθf] /+wɪθf+/ "(A)width."

David G1: [ɪfɪ'fɪŋgɜːs] /,fɪ'fɪŋgɜːs+/ "fish fingers."

John: [kɪ'As'fɜː.ɪ] /,kɪ'As'fɜː.ɪ+/ "Class 3."

Philip: [mɪ'fɔː.ɪ] /mɪ'fɔː.ɪ+/ "my fort."

/f/ is found in Cockney in a number of words which have /θ/ in Standard English. For some speakers there are alternating forms with /f/ and /θ/, the latter corresponding to a more formal style of speech. Other speakers however appear to use /f/ all the time - being perhaps less affected by the formality of a situation - and there are certain common words in which /θ/ is rarely if ever found. ~~is not found~~ in this study, such as "think", "three":

Ross: [ɪ'dəʊmpfɪŋk] /+aɪ'dəʊmpfɪŋk/ "I don't think.."

Jenny: [θri'fɪʃ] /'fri'fɪʃ+/ "Three fish,"

Jackie: [tɪ'wɛnti'sevənθ] /'twɛnti'sevənθ+/

"twenty-seventh"

/f/ may have syllabic function, whether it is long, preserving the rhythm of the intended utterance, or short:

Teresa: [ʼAf.ʼgɛʔ] /ʼajfəʼget/ "I forget"

John: [ʼsa.f:ʼbig,wān] /ʼsa:fəʼbig,wān/ "it's half a big one"

Jackie: [fʼbimʼwaʔnʔts] /(ə)fʼbimʼwants+/"I've been once,"

Kathleen: [fɕʼgʌʔəʼbrə,vä] /fjəʼgotəʼbrə,və+/
"Have you got a brother?"

1 Labio-dental Lenis Fricative /v/

"brother" /ʼbravə/ "favourite" /ʼfæjvrit/ "Vivienne" /ʼvivien/
"with" /wiv/, /wuv/

/v/ is produced in the same way as /f/, but with less energy than the fortis fricative, and with some voicing:

Diane: [nəʼvembə] /nəwʼvembə/ "November"

Russell: [ə,livʼəbstɛ:z] /ə,livʼabstɛ:z/ "I live upstairs"

However the voicing of /v/ is not consistently maintained by these speakers, even in inter-vocalic positions:

Russell: [mɪʼbrəvə] /miʼbravə+/"my brother."

Vivienne: [ʼrəwəvʼlɪtu,flæʔs] /ʼrəwəvʼlɪtu,flæts+/"row of little flats."

Kathleen: [ʼäyəʼsa.ɪd] /ʼavəʼsajd+/"other side."

Indeed, the fortis /f/ is often found in words and expressions which normally take /v/:

Jackie: [tʂəʼgɛfə] /təʼgefə+/"together."

Vivienne: [ˈwɒŋəˈlɪz.f] /ˈwɒŋəˈlɪf+/ "Where do you live?"

Elaine: [ˈA.fəfəˈmanɪʃ] /ˈa:fəfəˈmanɪj+/ "half of her money."

Jeanette: [weɪˈæf.t̪ə] /wɪjˈæf-tə/ "We have to.."

/v/ has allophones that are frictionless continuants - [ɹ] - differing from [ɹ] in that the lower lip is less protruded and the upper teeth approach the top rather than the inside of the lip:

John: [ˈɛɹ:,weɪ] /ˈevə,weɪ/ "everywhere."

David Gr: [wɪɹˈgɛɹz] /wɪvˈgelz/ "with girls."

Ross: [ˈhæɹəˈɹeɪs] /ˈhævəˈræɪs/ "have a race"

Diane: [ˈæɹənəˈbɪgwæn] /ˈævənəˈbɪɡwæn/ "having a big one"

A bilabial fricative [β] is also found for /v/:

Jeanette: [wɪβəˈɡʌn] /wɪvəˈɡʌn/ "with a gun"

Before /m/ or /b/, /v/ may have plosive realization, as the labio-dental [ɸ], or replaced by /b/:

Diane: [ˈwʊɸjʊt̪əbəm] /ˈwʊtjuwˈæbəm/ "What you having?"

Ross: [ɪɪˈlɛbmˈɔkʰeɪs] /ɪjˈlɛbəmˈwɒkɪts/ "eleven rockets"

David Gr: [ˈfʊɸbɔwɪbˈbɔɪz] /ˈfʊpɒwwɪbˈbɔɪz+/

"football with boys."

/v/ occurs in words where more standard forms of English have /ð/ in medial or final position. Most speakers - probably all the speakers in the 9-year old group - are able to alternate the two forms:

Vivienne: [ˈbrʌð̥.s] /ˈbrʌðes/ "brothers..."

Vivienne: ['bray·ʒɛn'sistɐ] /'bravərən'sistə+/
 "brother and sister."

Like /f/, /v/ may have syllabic function:

David Gl: ['ɛv·ʒɛz] /'əvvərəz+/"over us."

John: ['ɛv:,wɛ] /'evə,we:+"everywhere."

Elaine: ['næv·'sɛiɪm] /'nivə'siɪm/"never see him"

Kathleen: ['ɛvðə'pʰA:2kʰ] /'əvvəðə'pɑ:k+/
 "over the park."

/fr/,/vr/,/fw/,/vw/

/fr/ and /vr/ may be realized in a cluster or sequence of fricative + continuant; the continuant may be post-alveolar [ɹ], labio-dental [v], or labio-dental rounded [w]:

Jenny: [fɹwðə'wudz] /fruwðə'wudz/"through the woods"

Jeanette: ['fɹɛi.] /'friɹ+/"Three."

John: [kɪAs'fɹɛi.] /kɪAs'fɹɛi+/"Class 3."

Jenny: [wɪv'ɹɛwzɪz] /wɪv'ɹɛwzɪz/"with roses"

Teresa: ['fæɪvɹət] /'fæɪvɹət/"favourite"

It is also quite common for these sequences to be realized as a single segment. These may be labio-dental - [ɸ],[ɹ̥] - where the lower lip is more protruded than for [f,v], and friction is produced between the top teeth and the inside of the lower lip. Another possibility is that of labialized and lip-protruded segments - [ɸ̠],[ɹ̠] - or, for /fr/, the rounded bilabial fricative

[M] :

Jackie: ['le?əf'f.əʊk^xɪ.əz] / 'letəf'frokɪts+ /

"let off rockets."

Ross: [fəm'spɛɪdwæ.] /frəm'spijdweɪ/ "from Speedway"

Philip: [ʃeɪ'mɪnɪʔs] /frɪj'mɪnɪts/ "three minutes"

Diane: ['fæiəə?'pɹə'vɹgɹəm] /'fæjvɹət'prəwgrəm/

"favourite programme"

Jeanette: [1'li·ai?,ni:] /1'livrajt,ni:/ "live right near"

Diane: ['fɹaɪdɪ] / 'fraɪdi / "Friday"

Teresa: ['fæɪvɪtʃ] /'fæɪvɪt/ "favourite"

Vivienne: ['dɪf.ənt] /'dɪf.wet/ "different"

Similarly, /fw/, /vw/ may be realized by two segments in sequence, or by single, rounded segments:

Jenny: ⁿ [w̥iɣ'wänə] /wiɣ'wanə/ "with one of..."

Clifford: [ɪˈθəɪfəz,bləɪdɪn] /ɪˈtɪjfwəz,blɪjdɪn/

"my teeth was bleeding"

Dental Fortis Fricative /θ/

"nothing" /'nʌθɪŋ/ "Kathleen" /'kæθliːn/ "thousand" /'θæːzənd/

The blade of the tongue approaches the front upper teeth, while the sides of the tongue are pressed against the back upper teeth to prevent lateral escape of air. Air is forced between the tongue and the upper teeth, causing friction. The fortis

/θ/ is articulated with more energetic friction than the lenis /ð/. /θ/ has a more restricted distribution in this form of English than in more standard dialects, and tends to occur mainly in rather formal styles of speech. In all positions it is common for /f/ to be found in places where /θ/ would occur in formal style:

Russell: [ʰθə:ʔɪʰʂɪʰkʂ] /ʰθə:tiʰsiks/ "Thirty-six"
 Ross: [ʰʒasʰsmiθ] /ʰrosʰsmiθ/ "Ross Smith."
 Diane: [ʰθɹiθʰfo:ʰ] /ʰθriθʰfo:ʰ/ "three or four."
 Jenny: [ʰɛniθʰɪŋʰkʰɛʂ] /ʰeniθʰɪŋʰkelsʰ/ "anything else?"

but

Teresa: [ʰfɛ:tʰəʰfo:st] /ʰfə:təʰfo:st/ "thirty first"
 Diane: [ʰdɔʔkteʰsmiʰf] /ʰdɔkteʰsmiʰfʰ/ "Doctor Smith."
 Elaine: [ʰfpeɪ] /ʰfriʝ/ "three"
 Jenny: [ɛniʰfiŋʔ] /eniʰfiŋk/ "anything"

The rules governing the substitution of /f/ for /θ/ and ~~vice versa~~ appear to have been well learnt by these children, so that over-compensatory ^{substitution} of /θ/ for /f/, in a context for which Standard English provides no precedent, is rare. Only one instance is found among the 9-year old speakers:

Philip: [bɪʔʰʒaθə] /bitʰraθə/ "bit rougher"

A double-articulation [fθ] is recorded. For this segment the tongue-tip and blade approach the upper teeth while at the same

time the upper teeth approach the lower lip, so that the tongue-tip rests on the inside of the lower lip, forming an unbroken floor to the oral chamber. Air is directed through the aperture below the upper teeth at or near the point where the tongue approximates to the lower lip. This segment is to be considered an allophone of /θ/ and not /f/, since it occurs only in those places where /θ/ is possible, but never in contexts where /f/ could occur and /θ/ not:

David Gr: [ə'fθæ:zən^h] /ə'θæ:zən+/ "a thousand."

David Gl: ['ɹɒs'smɪ·¹fθ] /'rɒs'smɪθ+/ "Ross Smith,"

Tony: [æŋ'gɒt,nafθɪŋ] /æŋ'gɒd,nafθɪŋ+/ "ain't got nothing."

Other fricatives that may occur in place of /θ/ include [s],[ʃ],[h]:

Diane: ['k^xɛɪsstæɪd,ðə] /'kɪjsstæɪd,ðe:+/ "Keith stayed there."

Philip: ['mɛt³ʊ,ɡɪŋz] /'metu,sɪŋz/ "metal things"

David Gl ['ɛnɪhɪŋ'k^xɛɪs] /'enɪhɪŋ'kels+/ "Anything else?"

/θ/ may replace /ð/ in some places, a long /θ/ acting with syllabic function. It is to be distinguished from /ð/ in these contexts by its fortis nature, seen, for example, in the shortness of a preceding vowel:

Jackie: [wɪθ:'skɔɔ] /wɪθθə'skow+/ "with the school."

Jeanette: [sɛ²'t⁵ɛm·θ'twɛ^ɹf] /set'teməθə'twelf+/ "September the twelfth."

Diane: [nɛ'vembəθ.ɪ'twɛnt̪ə'sevənθ] /nɛ'vembəθə'twɛntə'sevənθ+/
 "November the twenty seventh"

Dental Lenis Fricative /ð/

"the"/ðə/ "this" /ðɪs/ "there", "their", "they're"/ðe:ʒ/ "brother"
 /'brʌðə/ "with" /wɪð/

/ð/ is produced in the same way as /θ/, but friction is less strong at the point of turbulence between teeth and tongue, and voicing is usual, though not invariable:

Jeanette: ['bɹä,ðə] /'brʌ,ðə+/"brother."
 Philip: ['wɪð,ðɪm] /'wɪð,ðɪm+/"with them."
 David Gl: [əvðə'plæj] /əvðə'plæj+/"of the play."
 Teresa: ['wan:ðɛ'ganz] /'wʌnəðə'ganz/"one of their guns"
 Kathleen: [ðə'sæm'bloʔks.] /ðə'sæjm'bloks+/
 "the same blocks,"

Friction may be completely absent, so that a dental or alveolar voiced continuant results - [ð̤],[ʒ̤]:

Elaine: ['aʔð̤ɹ'ɔs.pɪʔ,əʊ] /'apð̤ɪj'ɔsspɪt,əw+/
 "up the hospital."
 Jenny: [əʔð̤ə'ɹɛwzɪz] /ətð̤ə'rɛwzɪz/"at the roses"
 John: ['zæʔzə'wɛɪ] /'ð̤ætse'wɛj+/"that's the way,"
 Diane: ['ɛv̤vəʒə'ʃɒps] /'əwvəð̤ə'ʃɒps/"over the shops"

It will be seen that [ɹ] is an allophone common to both /d/ and /ð/. It is considered an allophone of /ð/ in contexts where /ð/ may occur, rather than an allophone of /d/, because of its close acoustic similarity to the continuant [ɹ], and because of the high proportion of continuants appearing for initial /ð/, compared with their apparent rarity as allophones of /d/ (see Table in V, 4.1iv).

The fricative and voiced frictionless continuants described above may be found as allophones of /ð/ in initial, medial and final position. However, there are certain differences in the behaviour of the phoneme in initial position, when it is also word-initial, and in other positions, as far as the less common allophones and substitutions by other phonemes are concerned.

Initial /ð/

Word-initial /ð/ - in other words, in demonstratives "this", "that", "there", "them", the articles "the", and a few other grammatical items - has a characteristic allophone in the voiced alveolar flap [ɾ], which was noted as an allophone of medial /t/ (5.3 iv above). Among 9-year old speakers this segment has a higher frequency of distribution as an allophone of /ð/ than it does for /t/ - 12 occurrences in /ð/ to 3 occurrences in /t/. Again, the pattern of the /t/-allophone is repeated here; all 12 occurrences of [ɾ] are noted in boys' speech:

John: [dæz't^sanzə,k^xɛz] /ðæz'tanzə,kets/ "there's tons of
cats"

Clifford: ['gəʔd^ə'stɪʔk] /'getðə'stik-/ "get the stick"

Tony: [dæʔ:'æɪk^höy,nɪn^h] /ðæt-'æɪkow,nɪn+/ "that acorning."

David Gl: ['t'ɛɪdə't^sɑɪm] /'telðə'taɪm+/ "tell the time."

Word-initial /ð/ may be replaced by /l/. This is also a common realization of the medial sequence /lð/:

Kathleen: [ɹɹ'läm,sɹɹʔ] /ow'lem,sowt/ "all them sort..."

Teresa: ['öylə'vɛɪmənz] /'owlə'rɔwmənz/ "all the Romans"

Clifford: [læʔ'də'ɹɹ] /læt'dɪjp/ "that deep"

Jeanette: ['læswɔʔ] /'læswot/ "That's what"

In the same way as /lð/ may be reduced to /l/, so may other sequences of Alveolar + /ð/ be reduced to the alveolar alone. /nð/ may become /n/; /zð/ may become /z/; /dð/ may become /d/; /sð/ may become /s/:

David Gr: ['gɛw.nə'p^hɪʔɹ] /'gəwunə'pɪɹ/ "go on the pitch"

David Gl: ['ɪ'zæʔ'ɹo] /+ɪ'zæt'ow+/ "Is that all?"

Russell: [vɹ.n,dɹə] /ræ:n,de:/ "round there"

Teresa: [ɹɹ'ɹ:sɹmə.n] /ət-'ses'mæn+/ "it's this man,"

The presence of /ð/ may be indicated by the dentalization of these single segments, so that /nð/, /zð/, /dð/, /sð/ are realized respectively as [n̪], [z̪], [d̪], [s̪]:

Elaine: ['wɛnɹ'wɛnʔ] /'wenðəɹ'went/ "when they went"

Vivienne: ['k^xɪl.dəɹɹ'læɹɹɹ] /'kɪldðəɹɹ'læɹɹɹ/ "killed the wrong lady"

Clifford: ['ðɪzwʊzə'bæŋʔ] /'ðɪzwʊzðə'bæŋk/ "this was the bank"

/ð/ may be replaced in these sequences by a second consonant at the alveolar position; /nð/ becomes /nn/, /zð/ becomes /zz/ and so on:

Jenny: [k^xʊz:ə'læɪdɪ] /kuzzə'læjdɪ/ "because the lady"

Kathleen: ['ɹæ:nnə'botəm] /'ræ:nnə'botəm/ "round the bottom"

Ross: [tʃɪ:fɹ̥.əs:ə'd^xɹ̥.əvə] /tuw'fɑ:ssə'draɪvə/

"(going) too fast, the driver"

Both cues - dentalization and lengthening - may be found together:

Jenny: ['sæd:æ^fwəz] /'sedðæjwəz/ "said they was..."

Tony: [ʒɪz'boɪz:æɪ] /ʒɪz'boɪzðæj/ "and these boys, they."

Ross: ['dæ.n̥.ə'mɒnɪ̃ə] /'dæ:nðə'monɪə/ "down the Monier"

/ð/ may be replaced by an alveolar consonant, which is usually /d/, but may be /z/ or /n/ in a context where there are assimilatory influences towards these articulations:

John: [də'k^hʌfə'dæmʔ] /də'kajne'dæmp/ "the kind of dump"

Tony: [a²p²d²ɛ:] /,apd²ɛ:/ "up there."

John: [ʔes²zəs²wɛɪ] /+ 'æs- 'zəs²wɛɪ/ "That's, that's why.."

Clifford: ['æɪnʔnɛs] /'æjntne:+/ "...ain't there?"

The glottal creak [ʔ] is found in a number of utterances in places where /ð/ might occur in more formal style. It is found even after [ʔ] :

Diane: [ʔæʔʊnɪ'sta:ʔɪd] /+ʔ(ð)ætəni'sta:tɪd/

"That only started..."

Elaine: [ʔsa.nʔ'lɪ.ʔʔʃʌʔ] /'sant'lajkʔ(ð)æt+/

"something like that."

Clifford: [ʔsämənɪʔʔð'boʔʔks] /'sämənɪt(ð)ə'boks+/

"someone hit the box,"

[ʔ] seems rarely, ^{except in the first of the above examples,} if ^{it} to occur as the glottal onset to a vowel after /+/ or /-/ , unlike the stop [ʔ] :

John: [ʔɛzə'kʰAnə'dam²pʰ] /+ɛzə'kajənə'damp/ "there's a kind of dump"

Diane: [ʔɪ.z'pʰəɪpʰʊ] /+ɪjz'pɪjpu/ "these people"

A more detailed investigation might establish that [ʔ] was an allophone of /ð/ in initial position, just as it is an allophone of /t/ in medial position - paralleling the distribution of [ɖ]. This appears an attractive idea, but one on which judgement must for the present be reserved, particularly when it is borne in mind the number of times that /ð/ has zero realization:

John: [ʔnɪə'ʔæɪn] /'nɪ ə'treɪn/ "near the train..."

David Gl: [ʔstɔ:ɪə'ʔsnə, kwɪjɪn] /'stɔ:ɪə-ə'snə, kwɪjɪn+/

"Story of the Snow Queen?"

Diane: [ʔæɪʔð'fɹaɪdɪʔɪ'fo:] /'æɪtə'fɹaɪdɪʔɪ'fo: /

"Had it the Friday before."

Word-medial and Word-final /ð/

Word-medial and word-final /ð/, as far as this study is concerned, has certain allophones which distinguish it from initial /ð/.

In addition to the voiced dental fricative and the continuants described at the beginning of this section, /ð/ in medial position may be realized as the 'double' articulation [vð], the lenis equivalent of [fθ] (see 5.4iv). It is interpreted as an allophone of /ð/, although it does occur in some places where it is medial but not word-medial, and could perhaps be regarded as a realization of /vð/:

- Jeanette: [mɪ'brʌ,vðə.] /mi'brʌ,ðə-/ "my brother"
 Ross: ['nɪnəvðəm] /'nɛjnəðəm/ "nine of them"
 Ross: ['fɪŋʔgəvðə'dʒaʊvə] /'fɪŋkəðə'draɪvə/
 "think of the driver"

The fact that this segment occurs only in places where /ð/ is possible, never where /v/ might occur and /ð/ not, and the fact that "of" is as often found in the form /ə/ as in the form /əv/, inclines this survey to regard it as a realization of the single phoneme /ð/.

Perhaps the most common feature of word-medial and final /ð/ is its alternation with /v/. As with /f/ and /θ/, it is suggested that the labio-dental is the informal or dialectal exponent, and the dental fricative the more formal exponent:

- Elaine: ['sʌ.m,bæɪv] /'sʌm,bæɪv+/ "sunbathe."
 Diane: ['brʌvə.sʔ] /'brʌvəs+/ "brothers."
 Russell: ['brʌ,ðə.s] /'brʌ,ðəs+/ "brothers."
 Jeanette: [ɛnɪ'aðə.stɹɔwkʔ] /ɛnɪ'aðə.stɹɔwk/
 "any other stroke..."

Jeanette: ['navə, skəʊ] /'navə, skow+/ "another school."

It is only rarely that this alternation of two forms produces over-compensation, in the substitution of /ð/ for /v/ in an inappropriate context:

Tony: ['nəʊ.rɪz'məʊð] /'nə: rɪz'muð/ "now he's moved"

The use of a form with /ð/ may be influenced by the context. In one case /ð/ in "with" is undoubtedly caused by a subsequent /ð/:

Philip: ['wɪð, ðɪ] /'wɪð, ðɪm+/ "with them."

The word "clothes" is invariably /kləwz/ or /kləws/ in this study:

Elaine: [ä, gɛʔ'kɪs.ðz] /ä, gɛk'kləwz/ "I get clothes"

vi Alveolar Fortis Fricative /s/

"Sir" /'sə:/ "sums" /'sams/ "Nursery" /'nə: sɪj/ "Miss" /'mɪs/

For the most common realization of /s/ - [s] - the edges of the tongue and the upper back teeth form a closure, preventing lateral escape of air. Air is then forced down a narrow groove in the centre of the tongue, so that audible and relatively energetic friction is produced between the tongue-tip and blade and the alveolar ridge. The area of the tongue's surface in use for [s] is relatively small:

John: [sams] /'sams+/ "Sums."

Jeanette: [k^hus'sœ:fə'gɔ?] /kus'sə:fə'gɔt/

Jackie: [ts'na "because Sir forgot"

Jackie: [ts'na.ɪs] /əts'naɪs+/ "It's nice."

Other allophones vary according to the phonetic context.

Dentalized /s/ - [s̪] is found before /ð/:

Denise M:
(6,7) ['dæʔs̪ðə'tʃeɪ] /'dætsðə'triɪ+/ "That's the tree."

Before post-alveolar realizations of /r/ retroflex variants may occur:

Jeanette: ['nɜːʃrɪɪ] /'nɜːsrɪɪ/ "Nursery"

Jackie: ['mɪnʔʃ̠ð̠,ʃ̠w] /'mɪnstɹu,ʃ̠w/ "Minstrel Show"

(where retroflexion is the cue that indicates the presence of the phoneme /r/)

Teresa: ['ɪʃtɹɪɪ] /'ɪstɹɪɪ/ "history"

Before /j/ a palatalized fricative may occur - [s̪j]:

Diane: [s̪jɔː'fæɪvəʔ] /s̪jɔː'fæɪvrət/ "What's your favourite"
and before /w/ a labialized variants - [s̪w]:

Jackie: ['ʔaŋ.kɪs̪wæɪ] /- 'aŋkəls, wæɪ+/ "(my) uncle's way."

The sequences /s̪j/ and /s̪w/ may be realized as the single segments [s̪j], [s̪w] (though /s̪j/ is in the majority of cases coalesced to the phoneme /ʃ/; see 5.4*x*ii):

Clifford: [əʔ'waʔn^ɪtʃə,nə.] /ət'wants̪jə,nəw+/
"at once, you know."

Diane: ['simɪn] /'swimɪn+/ "Swimming."

In clusters or close-juncture sequences of /s/ + Plosive, /s/ may have the alveolo-palatal allophone [ɕ]. This is alveolar but slightly palatalized, and the tongue is flat or spread, somewhat like /ʃ/, rather than the grooved position associated with [s]:

Clifford: [ɕəy'ɔtəʔnɔ] /,fruw'stəwns/ "threw stones"

" : [ɕəprɪnz] /'æsprɪnz/ "aspirins"

Russell: [ɕɔtəz] /'sɪstəz/ "sisters"

John: [ɕɪɔ'tʃɪ] /ðɪs'triː/ "this tree"

It is noticeable that the alveolo-palatal segment is not confined to the pre-consonantal position in these utterances. However, the /s/ + Plosive sequence is common to all the examples, and it is presumed that the other cases of [ɕ], and of [ʒ], are the results of dilation. More palatalized variants still are perceptually closer to /ʃ/ than to /s/, but occurring as they do before plosives, they must be regarded as allophones of /s/, since sequences such as /ʃp/, /ʃt/, /ʃk/ are not English:

Clifford: [kʰamɔ̃tʃə'ʃkʉ] /'kams-tə'sku/ "comes to school"

" : [wɪ'ʃkɔ:pə] /wɪ'ska:pə/ "we scarper"

Jenny: [æʃtɹənʉ?] /'æstɹənʉt/ "Astronut(sic)"

Even in the pre-consonantal context these spread-tongue articulations are not invariable. They may be a dialectal feature,

or a characteristic of certain idiolects within the dialect.

Another allophone is the tensely articulated [ɹ̥]. For this segment the tongue is in the position for the normal alveolar described above, but is held more firmly in position against the alveolar ridge. There is less aperture for air to escape through, with the result that greater force probably has to be used in articulation. Acoustically, a more attenuated, "hissing" effect is heard. This ~~spandh~~ seems to occur particularly in the speech of girls in utterance-final positions:

Jenny: [ˈpɪæ̃ŋˈgæɪmɐ] /ˈplæjŋˈgæjms+/ "playing games."

Diane: [dʌ̃.mɪˈɑːnts̥.] /dæːmɪˈɑːnts+/ "down my Aunt's."

Kathleen: [ˈfæ̃ʊˌt̥ɪnɐ] /ˈfæːnˌtɪns+/ "fountains."

though it is also found occasionally in other positions:

John: [ˈzæ̃ʔɜ̃, wæɪ] /ˈðæt̥sə, wæj/ "That's the way"

Diane: [ˈzand̥eɪ] /ˈsandiˌj/ "Sunday"

Apart from the conditioned variations of /s/ described so far there is much free variation in its allophones. As well as variants which show relatively gross divergences from [s], there are those whose differences are more slight. Beside the dentalized [s̪], palatalized [sʲ], retroflex [ɤ̣], there are the slightly dentalized [s̪̥], slightly palatalized [sʲ̥], slightly retroflex [ɤ̣̥], all of which may be in free variation

with the alveolar norm:

- Jeanette: ['navə, skoo] /'navə, skow+/ "another school."
 Diane: ['bravə. s̺] /'bravəs+/ "brothers."
 Jeanette: ['ɹɔkʰrʔs̺.] /'rokits+/ "rockets."
 Elaine: [ʔɹ̥s̺s̺'mis̺, t̺] /ʔɹ̥as'mist, ə+/ "just missed her."
 John: ['s̺ɛbt̺'aɪms̺] /'sabt̺ajms/ "sometimes"
 Russell: ['bɔʔks̺is̺] /'boks̺is/ "boxes"

The slightly retroflex variant is a characteristic idiolectal feature of these last two boy speakers. Some speakers may draw back the whole of the tongue while articulating /s/, rather than just curling back the tongue-tip as for [s̺]. The tip and blade approach the roof of the mouth, but at a point further back on the alveolar ridge - [ʃ̺]. The tongue is held rather more tensely than for [s̺], and is more 'bunched up'. Both boys and girls may use this variant, which does not seem to be conditioned:

- Russell: ['θɛ:ʔr̥ʃ̺iʔks̺] /'θɛ:ti'siks/ "Thirty six"
 Clifford: ['kiw̺s̺.] /'kləws+/ "clothes."
 Elaine: [ʃ̺ei'm̺d̺'sist̺] /sij'maj'sisti/ "See, my sister..."

A complex and rare allophone is a double fricative [m̺ç], with both palatal and labial friction, the lips being rounded:

- Elaine: [dæi'm̺çpendr̺] /dæj'spendit/ "They spend it"

Length of /s/

/s/ is often lengthened in slower more deliberate styles of speech, especially before /+/ and /-/:

Kathleen: [ˈlAs., tʃə] /ˈla:s-, tʃə:+/ "last year."

Ross: [mɪs-ˈgrɪmbə:g] /mɪs-ˈgrɪmbə:g/ "Miss Greenberg"

Jenny: [ənɪˈpɛ.əz:] /ənɪˈpets+/ "any pets?"

Diane: [ˈwənɪs:] /ˈwanɪs+/ "One is,"

Long /s/ may also have syllabic function, indicating the presence of one or more syllables:

Ross: [ˈpɪsɪsɪvˈstɪŋ] /ˈpɪjsəsɪvˈstrɪŋ/ "pieces of
string"

Jackie: [kʰə̃s̃.s̃ˈgʊ.t̃] /kəsəsˈgud+/ "because it's good."

and it may of course be an expression of /ss/:

Ross: [ˈdæɪndʒə, rəs, sɪsˈspɔʊt] /ˈdæɪndʒə, rəs, sɪsˈspɔwt/
"dangerousest sport..."

Tony: [ˈsɪs., dɑ] /ˈsɪs, stə+/ "sister."

Consistency of Articulation

It is particularly noticeable in connection with this phoneme that where /s/ is articulated more than once within an utterance it is very often the same variant of /s/ that is used in both cases. Speakers at this age are thus comparatively consistent in their articulation over short stretches of speech, even though they may have a large number of variants in use for a phoneme. This may be compared with the speech of younger children, in which several different variants of this phoneme in

particular, but also other phonemes, may be found within one short stretch of speech.

11 Alveolar Lenis Plosive /z/

"zoo" /'zuw/ "noisy" /'nojziʃ/ "clothes" /'kləwz/ "cousin" /'kəzən,

/z/ is the lenis counterpart of /s/. Its voicing is fullest in ⁿinter-vocalic position, or before or after a lenis consonant in the middle of an utterance:

David Gr: [ə'fθæ:zən^h] /ə'θæ:zən+/ "a thousand."

David Gl: ['æɪʔ,jɜ:z'ärd] /'æjt,jɜ:z'awd+/ "Eight years old."

Clifford: ['bæ.d'ɪ.zðəv] /'bæd'ɪ:zðəw+/ "bad ears though."

Russell: [mɪ'legzwʊz'mæɪd] /mɪ'legzwʊz'mæjd/

"My legs was made..."

In utterance-final position, however, /z/ is frequently devoiced. Indeed, /s/ may be found in almost every utterance-final position where /z/ may occur, in plural and verb endings, and words such as "was", "because", even names such as "Moses":

Teresa: ['mæ.ʒzi:z....'mæʒzɪs] /'mæwziʃz + 'mæwzɪs+/

though it is possible that words like "buzz", "cheese", "noise" will be less subject to this devoicing, being less common forms than "was", "is", and not having endings reminiscent of singular verbs or of plural nouns, as it might be argued "was" "Moses" has. Cf.:

Lindsey: [^(8.1)l^hætsə'nɔɪz] /'lotse'nojz+/ "lots of noise."
 ([ɮ] is 'tense' /z/ - the lenis counterpart to [ɛ]).

When final /z/ is devoiced, the voiceless fricative is almost always fortis [s] rather than lenis [z̥] . The former segment is to be regarded as /s/ :

Philip: ['sɒmz] /'sɒmz+/ "sums."
 Tony: ['sɒm] /'sɒmz+/ "sums."
 Teresa: [ˌjɔː'ɹɪz̥s] /ˌjɔː'raɪz+/ "your eyes?"
 Vivienne: [ʃɔː'hæz̥s] /ʃɔː'hæɪz+/ "is your eyes?"
 Jenny: ['diːtsən'aɪz] /'aɪtsən'aɪz+/ "hearts and eyes,"
 David Gr: [wɪv'gɜːz] /wɪv'gelz+/ "with girls."
 Jackie: [tʰʊ'gɜːs] /tʰu'gels+/ "two girls."

/z/ may also be replaced by the voiceless form in the middle of an utterance:

John: ['mɪɪə'kʰæsən] /'maɪə'kasən/ "My, er, cousin"
 Kathleen: ['wɒsɪs'næɪz̥] /'wɒsɪs'næɪm+/ "What's his name?"
 Elaine: [dɒʊn'ɒwɜːs'ɪz̥meɪ] /dɒʊn'owɜːs'ɪpmɪj+/
 "don't always hit me."

It is not often that /s/ is replaced by /z/ . When this does happen it is the lenis nature of the fricative, rather than its voicing, which is most distinctive:

Clifford: ['y-lə'grɑːz̥] /'owlə'grɑːz+/ "all the grass."
 David Gl: [kɪAɪmd'eɪv.jɜːz̥] /kɪAɪmd'əwvɜːz+/
 "climbed over us."

/z/ displays some of the varieties in articulation that were noted for /s/, though it may be because of the lesser prominence of lenis consonants in comparison with fortis that the analyst did not distinguish so large a number of varieties of /z/ as of /s/. Dentalized allophones are recorded in the context of /ð/ and in free variation:

Tony: [ʒɪz'boɪz:æɪ] /ðɪz'boɪzðæj/ "these boys, they..."

Jenny: [bɪ'kʰʊz̥·ɛ,wʏz] /bɪ'kuzðe,wuz/ "because there was"

Teresa: [ˌjɔ:ˈɹɹɪz̥ʰ] /ˌjɔ:ˈrɹɪz+/ "your eyes?"

There are retracted variants [ʒ̠] -

Tony: [ˈæɪkʰo·n̠z̠] /ˈæɪkɒwnz+/ "acorns."

alveolo-palatal variants - [ʒ̠] -

Russell: [mɪˈlɛgz̠wuz̠ˈmæɪd] /mɪˈlɛgz̠wuz̠ˈmæɪd/

"My legs was made..."

and labialized [ʒ̠], as a conditioned allophone in the proximity of /r/ and rounded vowels -

David G1: [wuz̠ˈbɪg] /wuz̠ˈbɪg+/ "was big,"

Vivienne: [ʊz̠ˈrɪ:lɪ] /ʊz̠ˈrɪ:lɪ/ "was really..."

and also as a realization of /zw/:

David G1: [plæɪˈgæɪmz̠wɪvɪt̠] /plæɪˈgæɪmz̠wɪvɪt̠+/

"play games with it."

Bilabial fricative segments [β],[β̠] may result from the conflation of the features of /z/ (friction, voicing) and /w/ (bilabial articulation) into one segment:

David Gr: [ˈ2u.ˈpɪæɪβ:ɔ2] /+ˈuwˈplæjzwot/ "Who plays what..."

Clifford: [ʌβˈü:fˈkɪa.ɪn] /(owəz)a:fˈkrajin+/ "(I) was half crying

One speaker who was sucking a sweet at the same time as he was talking produced some 'spluttery' dentalized fricatives, with a great deal of excess noise:

David Gr: [ɹɪk^ʰɪˈs^θə:vɪ2, bɔ"] /rikɪjˈsə:vɪt, bow+/

"Ricky Servitbull,"

" : [2əɪðzˈgʌ2əb^ʰɛ2əˈf^ʰθ^ʰzən"] /+ɪjzˈgotebetəˈθæ:zən+/

"He's got about a thousand."

11 Palato-alveolar Fortis Fricative /ʃ/

"shop"/ˈʃop/ "shallow" /ˈʃælə/"machine" /məˈʃɪjn/"Ashmore"
/ˈæʃmo:/"crash"/ˈkræʃ/"finish" /ˈfɪnɪʃ/

For /ʃ/ the blade and part of the tip of the tongue approach the alveolar ridge, while the front of the tongue approaches the hard palate. The tongue is flat compared with its grooved position for the articulation of /s/, and friction occurs over a relatively large area of the tongue. /ʃ/ may be accompanied by some lip-rounding, especially in the proximity of a rounded vowel, though Cockney /ʃ/ does not seem to have as much lip-rounding as is given to the sound by many speakers of Standard English:

Philip: [ˈfɪʃɪm, wɒ^ʰns] /ˈfɪʃɪm, wans+/ "Fishing ones."

Vivienne: ['æʃ·mɔ] /'æʃmɔ:+/ "Ashmore."
 Russell: ['ʃɛlɪn] /'ʃɪlɪn+/ "Shilling."
 John: ['nɪðə'ʃɔ̃²ps] /'nɪðə'ʃɒps+/ "near the shops."
 Teresa: ['bɛ:nɪn·'buɹ·] /'bɛ:nɪn-'buɹ+/ "burning bush,"

Among the variants recorded for /ʃ/ is a more palatalized segment [ɹ], in which there is less alveolar and more palatal friction. A retracted version [ʃ̠] has friction at the same area of the roof of the mouth, but the region of the tongue used is more blade and tip than front, the tongue being pulled back from its position for [ʃ]:

Ross: [ʃɛw'kʰæɪ'ʃam,tʰʌms] /ʃɛw'kæj'ʃam,tajms+/
 "She's okay sometimes."

Elaine: [ʃɛ'daɪd] /ʃɪ'daɪd+/ "she died,"

John: [ʃ̠ɛɪ'gɛs^ɛ] /ʃɪj'gɛws/ "She goes..."

Clifford: ['kʰamʃ̠tʃə'ʃku] /'kams-tə'sku/ *"comes to school"

This articulation, having more tongue-tip involved than for [ʃ], gives the impression of being retroflex. In the last example above, it occurs immediately before retroflex /t/, which has affrication of the same retracted palato-alveolar type. A 'fronted' segment [ʃ̠̟] is more alveolar than palatal. Auditorily it has a 'thinner' sound than [ʃ], and a higher pitch, the result of friction being produced over a lesser

*For the interpretation of [ʃ̠̟] as /s/ in this utterance see 5.4 vi above.

area. Allophones with only slight palatal friction, but with a flat or spread-tongue articulation - [ɤ] - are also found for this phoneme:

Teresa: [ˌʃɛːlɤ'kʰɐʔms] /ˌʃəːlo'kəwms+/ "Sherlock Holmes."

Jackie: [ˌʃəm'kwɛɤ,ʔənʔ] /ˌʃəm'kwɛʃ,ʔənʔ+/

"some questions."

Vivienne: [ɤ'gɔʔ'wæənʔ] /ʃə'got'wæn+/ "She got one,"

/s/ may quite easily be replaced by /ʃ/ in the context of other palato-alveolars: before plosives, where /ʃ/ may not occur in English, a palato-alveolar segment must be interpreted as /s/:

Jackie: [ˌʃəm'kwɛɤ,ʔənʔ] /ˌʃəm'kwɛʃ,ʔənʔ+/

"some questions."

Ross: [ʃɐ'kʰæɪ'ʃam,tʰʌms] /ʃəw'kæj'ʃam,tajms+/

"She's okay sometimes."

Jenny: [ðəɪ'æʃtɤnuʔ'ʃɐʔ] /ðɪj'æstɹənʔ'ʃəw+/

"The Astronut Show."

^{weak}
Short/vowels after /ʃ/ seem to be readily elided, giving the consonant syllabic function:

Elaine: [kʰʊʃ.ˈlɪzəlɤ'wæːɪ] /kuʃəˈlɪzəlɔŋ'wæj+/

"Because she lives a long way."

David Gr: [ʃlɑː'ʃkɪm] /ʃələj,ɑː'skim / "Shall I ask him.."

Kathleen: [ˈpʰɹɪʃ'pɛænəs] /ˈpɒlɪʃɪs'pɛænəs+/

"polishes pianos,"

Before another vowel, the weak vowel may disappear completely:

Elaine: [ˈʃædsɑ̃fɪŋ?ˈvɔŋ] /ˈʃædsanɪŋkˈrɒŋ/ "She had something wrong"

Diane: [kʰʊʃˈrʊwæɪzˈnəʊ] /kʊʃˈʃowwæɪzˈnuw/
 "because you always knew.."

κ Palato-alveolar Lenis Fricative /ʒ/

"television" /ˈtelɪʒˌvɪʒən/ "usually" /ˈjuwʒəliʒ/ "Was you..?"
 /ˈwɔʒə/

This phoneme is comparatively rare in Cockney, and has a limited distribution. As in other forms of English it is never found word-initially. Unlike Standard English, however, it is not found in word-final position either. Where Standard English would have final /ʒ/ in "garage" Cockney has the affricate /tʃ/

Debra G: [tˈsəʊːˈgʰævɪtʃ] /tuwəˈgærɪtʃ+/ "to a garage."
 (ʃ, p)

In this study, then, /ʒ/ is found word-medially or at word-boundaries, where it is a result of coalescence of /z/ and /j/, or of assimilation of /z/ in the direction of a nearby ^{/j/ or} /ʒ/. In these situations it may be syllable-medial or initial: it may also form part of a medial cluster:

Jenny: [ˈtʰɛləˌvɪʒən] /ˈteləˌvɪʒən+/ "television."

Vivienne: [ˈwʌ2ˌkʰələˈʒohɛ.ə] /ˈwɒkˌkələˈʒohɛ+/

"What colour's your hair?"

Teresa: [kʰuɜʃfʰkʰeɪɪ?] /kuɜʃɪj'kiɪp-/ "Because she keep..."

Apart from the palato-alveolar variety, there is recorded an alveolo-palatal segment [ʃ]:

Tony: [ʰɪɪjəʊɪɪz,plæɪz] /ʰɪjjuwɪɜ,plæjz/

"She usually plays..."

Clifford: [ʰwəmweɪzəʊ'bəʊn] /ʰwəmweɜʊw'bəʊn+/

"When was you born?"

/sɪ/, /zɪ/ and /ʃ/, /ʒ/

It is a characteristic of 9-year old speech that sequences of /s/ or /z/ + /j/ should coalesce in rapid informal speech to produce /ʃ/ or /ʒ/ :

Vivienne: [wʊɪ'kɪAəʊɪn] /wuk'kla:ʃuwin+/ "What class you in?"

John: [ʰlɪ:ʃɪɪ] /ʰlɪ:ʃɪ:+/ "last year."

Philip: [ʃɪ,ʒes'fæɪɜ] /ʃɪ,ʒes'fælɜ+/ "She just fouls you."

John: [ʒeɪ'meɪnɜ'wam] /+at'mɪɜnɜ'wam+/

"That means you won."

/sɪ/, /zɪ/ may be expressed in these positions by two segments - [sɪ],[zɪ], or by one palatalized fricative - [sʲ],[zʲ]:

Diane: [sɪɜ'fæɪɜɪɜ] /sɪɜ:'fæjvɪɪt/ "What's your favourite?"

Teresa: [ʰkʰalɜɪɜ,sɪɜ:'re:ɪ+/

"(What) colour's your hair?"

Clifford: [ɒn'sæɪɜ,dɪɜɜ'kʰæɪn] /ɒn'sæɪɜ,dɪɜɜ'kæn+/

"On Saturdays you can."

A process of back-formation may account for the replacement

of /ʃ/ by [s] in:

Jenny: ['fɜːsʃɪ'wɛnɪ] /'fe:ssʃi'went/ "First she went..."

i Glottal (Fortis) Fricative /h/

"Hackney" /'hætni/ "have" /'hæv/ "hair" /'he:/

/h/ is produced by air passing at some pressure through the glottal and pharyngeal passages, resulting in voiceless friction in the ^{oral tract} ~~lower pharyngeal cavity~~. [h] is vowel-like in that the tongue and the oral cavity in front of the pharynx assume a position as for a vowel - usually that of the vowel which is to follow. In whispered speech, such as is found in recordings obtained from some shy or nervous girls, many vowels are produced with this voiceless friction and little or no voicing;

Jackie: ['twent^hɪ'sevəmf] /'twentə'sevəmf/ "twenty seventh"

Vivienne: ['brʌðə'sɛ'sistəs] /'brʌðəsə'sistəs+/

"brothers or sisters."

However, there is no contrast in this type of speech between voiced and voiceless vowels; /h/ is only contrastive in syllable-initial positions, where it is usually the onset to a stressed syllable, and occasionally in medial position:

Ross: ['ʔɛvə'hɛ:de] /+ 'evə'hɛ:de/ "Ever heard of..."

Jenny: ['hæ2nɪ'wɪk¹] /'hætni'wik-/ "Hackney Wick"

Clifford: ['di2ən,hæv] /'diten,hæv/ "didn't have..."

Teresa: [ðə'sænd^zwəz'həʊ^zt^z] /ðə'sænd-wəz'hot+/
 "The sand was hot."

Vivienne: ['wʌ^z,k^zalə'ʒohɛ.ə] /'wɒk,kalə'ʒohɛ:+/

"What colour's your hair?"

David G1: ['ɛnɪhɛŋ'k^zɛ^zɪs] /'ɛnɪhɪŋ'kɛls+/ "Anything else?"

Clifford: ['lɪ^zɪʃ'ɹɒk^zɪhɛŋ:ə'dæɪ] /'lɪtɪs'ɹɒkɪhɪnnə'dæɪ+/

"lit this rocket in the day."

/h/ does not often occur medially. When it does it may be substituting for another fortis consonant, as in the last two examples above.

Compared with Standard English and educated London English, /h/ in Cockney has a reduced functional load. This is particularly noticeable when /h/ is absent in an inter-vocalic position, where some kind of linking device has to be introduced, such as /r/, or a linking [w]:

Vivienne: ['gɛnə^zævə'dɔ^zə^zg^h] /'gɛnə^zævə'dɒg+/
 "going to have a dog."

Teresa: [æ:'vAɪd^zə,jəʊ] /æ:'rawdɐ,jʊw+/ "How old are you?"

David Gr: [ðɛ'ɹɒ^zɒ^z'hɑ:d] /ðɛ'row'a:d+/ "They're all hard."

/h/ is sometimes introduced at the beginning of a word where Standard English would not have it:

Vivienne: ['kæləʃ^z'hA^zɪs] /'kæləʃo'hajz+/ "(What) colour's your
 eyes?"

liffor

Tony: [ʔ⁵æ.t⁵en'hɪnʃɪz'a.ɪ] /'æjtən'hɪnʃɪz'ʌj+/
 "Eighteen inches high."

In both these utterances the 'intrusive' /h/ can be explained as occurring under special circumstances. In the first case the /h/ in Vivienne's question is undoubtedly a perseveration from her previous utterance /'wɒk,kələ'ʒohe;+/"What colour's your hair?" In the second utterance the form /'hɪnʃɪz/ results simply from the transference of initial /h/ from "high" to "inches". Intrusive /h/ may also be a product of emphatic speech, the voiceless onset to an initial vowel functioning in much the same way as [ʔ]:

David G1: [hɪz'æʔ'gʊd] /+hɪz'æk'gʊd+/"Is that good?"

Ross: [ʔAb:ɪn'pɪæən] /+(h)əjbɪn'plæjən/"I've been playing"

Laughter and speech together may produce an inter-vocalic voiceless segment that is non-phonemic:

Ross: [ʔnə^hʒə] /+'nəw+/"No."

Voiceless nasal friction may be interpreted as /h/ in:

Clifford: [ʔk^hAm^hmm^h'skoʊ] /'kəmənhəm'skoʊ/
 "come home from school"

5.5 Nasals

As with the plosives, so with the nasal consonants there is a total closure within the mouth, the closure being at the bilabial, alveolar and velar positions respectively for /m/,

/n/ and /ŋ/. Nasals are distinguished in articulation by the lowering of the soft palate so that air escapes through the nasal passage. Voicing is heard throughout the articulation of a nasal, and with it the distinctive nasal resonance, caused by resonance in the naso-pharyngeal chamber. This is often carried over into vowel articulations before or after a nasal consonant.

Non-nasal Realizations

It sometimes happens that the nasal passage is obstructed, either for some physiological reason such as swelling of the adenoids or a 'cold in the nose', or as a result of a deliberate raising of the soft palate on the part of the speaker. If the speaker then attempts to produce a nasal in the normal way a voiced plosive articulation will result:

Debra C: [ˈtʃaːb^h,pɛʔ] /ˈtrab,pɪt+/ "trumpet."

Janice: [ˌsɪd:əˈvɛlə] /ˌsɪddər'relə/ "Cinderella"

Lindsey: [ðəˈægkeɪf] /ðɪˈægkeɪf/ the handkerchief

In the case of /n/ a flapped articulation may distinguish it from /d/ when there is no nasal resonance:

Dawn E: [ˌd̥ˠaʊ̯d̥ˠˈɛd̥ˠˈmɛɪ] /ˌdaʊnˈed-ˈmɪj+/

"Dawn Edmeade."

It is also possible to simulate the resonance of an egressive nasal with an 'ingressive' articulation, at least for /m/ and

/n/. The oral closure is maintained at the bilabial or alveolar point of articulation, and the soft palate is raised. Then the ^Cpharynx is lowered, causing a ^{vacuum} in the oral chamber. To fill this vacuum, some air travels from the lungs into the mouth and, passing as it does through the vocal cords on its way, causes them to vibrate, giving what is often described as 'ingressive' voicing. This cannot be sustained for long as the ^Cpharynx soon reaches the limit of its downward travel. After a brief period of voicing and resonance in the back of the oral cavity, then, the oral closure is released. If the ^Cpharynx is still travelling down and away from the lips at the time the closure is released there is still a vacuum in the mouth, so that there is a slight implosion at the point of articulation. The symbols [ɓ] and [ɗ] may be used for these articulations, even though they are not exactly the same as the 'implosives' usually signified by these symbols. A brief, flapped contoid of this type is found in inter-vocalic positions, and may be symbolized [ɓ̥], [ɗ̥]. There may be no release of the oral closure - [ɓ̥], [ɗ̥] - or the release may take place, in utterance-final positions especially, with some aspirated or voiced egressive outrush of air. This is because the downward movement of the ^Cpharynx builds up more pressure in the lungs than can be relieved in the slight escape of air through the glottis, and also causes a temporary interruption in breathing, which is resumed after the articulation of [ɓ] or [ɗ] with a

voiceless or voiced exhalation of breath, as in [ʃ^h], [d^h] or [ʃ^ə], [d^ə]:

- Debra C: [ə'pʊʃəd^h] /ə'bumən+/ a woman
 ['bægəv'dæ.] /'majgəw'næ:+/ "My go now."
 ['səʊ.p^hə,bæd] /'suwpə,mæn+/ "Superman."
 Jackie: ['dæŋ^hzəd^h] /'nuwtəd+/ "Newton."
 Tracy P: [bA'ʃəbʊə.ʔsbəʔ'dəʔbæi'dæ.h] /maj'mamwə ksbət'notmɪj'dæ/
 / "My Mum works but not my Dad."
 Kathleen: ['k^hæθləɪd^h] /'kæθlɪjən+/ "Kathleen."
 ['dʌr.d^h] /'naɪjən+/ "Nine."
 ['wʌsɪs'ɪŋ.ɪb^h] /'wɒsɪs'næɪjən+/ "What's his name?"
 Debra C: ['gəv'd^hædə'vɛv^hʃə'βɪβ'ɪd^hæd^h]
 /'gəwdæne'rəwmə'wɪv'maj'næn+/
 "Go down the Roman (Road) with my Nan."

This type of articulation is not found for /ŋ/ in the present study, the reason probably being that the velar closure would provide only a small chamber behind it, in which a vacuum would be created by the downward movement of the pharynx much more quickly than in the larger chambers behind the alveolar and bilabial closures. This would not allow voicing to continue for any appreciable length of time before the release of the velar closure was necessitated by the build-up of pressure in the lungs. Empirically, a velar ingressive articulation of this type is much more difficult than the articulation of [ʃ] or [d].

With many speakers it is hard to say how far these allophones have physiological causes and how far they are learnt. It is striking that all the examples of ingressive articulation of this type recorded in the present study come from the speech of girls, which may indicate that they are learnt from other girls, or from some other female source such as the mother. It is not likely that girls should be especially prone to colds or adenoid infection in this part of London, while boys remain immune. Among the older girls a good indication that this is a learned characteristic, and can be controlled, is the fact that ingressive realizations of /m/ and /n/ may be found in the same utterance as their more normal nasal realizations:

Kathleen: [bɪ'mam,ɛɹmɔɪ] /mɪ'mam,elpmɪj+/
 "My Mum helped me."

" : [bA'mæɪsən:] /maj'mæɪsən?/ "My maison(ette)"

unless it is the case that with practice Kathleen has become able to produce an ingressive allophone that is indistinguishable for the analyst from [m].

Nasality of Voids

/m/, /n/ and /ŋ/, as was remarked above, commonly produce nasal resonance in nearby vowels. It may happen also that nasal resonance in a void is the sole indication of the presence of a nasal consonant, closure of any kind in the

Elaine: [ˈweɪtɪn, rɪm] /ˈweɪtɪn, rem/ "waiting room"
David Gr: [æt ˈhəʊm] /æt ˈəʊm/ "at home"
Russell: [ˈhəʊ ˈmeniʒ] /ˈæ: ˈmeniʒ+/ "How many?"
Ross: [ˈnaɪn ˈsɪks] /ˈnaɪnɪn ˈsɪks+/ "Nine and six."
Elaine: [elɪ ˈwɛɪ] /elɒŋ ˈwɛɪ+/ "a long way."

Kathleen: [mā'həv̥.] /maj'həw/ "my home"
 Tony: [k'hām'jə̌.] /kam'ræ:+/ "come round."
 Vivienne: ['dɪm-əʔ,skoo] /'dɪfwet,skow+/ "Different school."

Elaine: ['sã.nɔlAɔ, ðæɔ] /'santlaɟk, ðæt+/* "something like that."
 " : ['sãɪŋɔ'vɔŋ] /'sanɪŋk'ronɟ/ "something wrong"
 Clifford: ['sã:n'liɜ, iɔ] /'saan'lit, it+/* "someone lit it."

David Gr: ['lɛvəm'ʊɔ,kɪts] /'lɛvəm'ro,kɪts+/ "eleven
rockets."

Ross: [ɪɪ'leɪbəm] /ɪɪ'leɪbəm/ "eleven"

Diane: [mɪ'ʃɛɪdʰ] /mɛ'ʃɪɪd+/ "machine."

John: ['ga:dn̩] /'ga:dən/ "garden"
 Philip: ['tʰɔʔn̩] /'tɒt(ə)nəm/ "Tottenham."
 Teresa: ['wan:ðɛ'ganz] /'wanəðe'ganz+/ "one of their guns."
 Ross: [mɪs'mɔʔgɹ̩'kæɪm] /mɪs'mowgɹ̩'kæɪm/
 "Miss Morgan came"
 Jenny: [k'ə'dəʊgɹ̩'tʰɛɪs] /kə'dəʊgɹ̩'terɪs/
 "Cadogan Terrace"

Assimilation

As is the case with the voiced plosives, the alveolar member of the nasal set of consonants is more liable to assimilate to a following segment - labial, labio-dental or velar - than are the other two, /m/ and /ŋ/. /n/ may assimilate to /m/ before and sometimes after /m/, /p/, /b/, /f/, /v/, /w/ and /r/:

John: [dʒɔmmæʔ'dʒɔŋq̣.d̥ʰ] /dʒɔmmæt'donowd+/
 "John Macdonald."
 Philip: [m'pʰʊd̥.ə'bɹɪʔks] /əm'powdðə'briks/
 "and pulled the bricks"
 Teresa: ['sambəʔ] /'sambə:t+/ "sunburnt."
 Jackie: [ɪŋ'flæ.ʔs] /ɪm'flæts/ "in flats"
 David Gr: [sɛvən̩sɪʔks̩] /'sevən'siks/ "seven and six"
 Elaine: ['spɪnɪm'wɪl̩s̩] /'spɪnɪm'wɪls+/ "spinning wheels"
 Ross: [fɪʃɪm̩rɒd̩] /'fɪʃɪmrɒd/ "fishing rod"

Before velars, it assimilates to /ŋ/:

Diane: ['k^xɛɪfən'gæɪəm] /'kɪɪfən'græjəm/

"Keith and Graham."

Vivienne: [ɛɪ,kɪð.s'fpeɪ] /ɪɪ,kla:s'friɪ+/ "in Class 3"

/m/ is sometimes assimilated to /ɪ/, especially in the expression "I'm going to":

Robby: ['ɛɪ:nə,lAɪt] /'ɛɪnə,lajt/ "I'm going to light"
(7,0)

Kathleen: ['Aɪnə'nəɪ] /'aɪnə'nəɪ/ "I'm going to buy..."
(6,6)

and, occasionally, to /n/:

Kathleen: [sən'tsɛ:zəz] /sən'træ:zəz/ "some trousers"

Jill: ['ɛən't^hɪms] /'sən'taɪms+/ "sometimes,"
(7,9)

Generally, however, it resists this type of assimilation:

Jackie: [ɪ,ʃəm'kwɛʃ,ʧɛnz] /ɪ,ʃəm'kwɛʃ,ʧɛnz+/

"some questions."

Jeanette: [ɪ,gæɪm'kɔd^s] /ɪ,gæɪm'kɔd-/ "game called.."

/ɪ/ is rarely assimilated, either to /m/ or to /n/. One instance only is recorded in the entire study:

Dawn E: [ə,lɔm'wɛɪ] /ə,lɔm'wɛɪ+/ "a long way."
(6,6)

ii Bilabial Nasal /m/

"Mum" /'mam/ "remember" /rɪ'membə/ "dump" /'damp/

Variation in /m/ includes a labio-dental articulation - [ɱ] - not only in the context of /f/, /v/ and labio-dental /r/, but

also in free variation with [m]. It may occur when a speaker is smiling:

David Gr: [ˈɛvɪˈvɔːkʰɪ.ʔs] /ˈlevəmˈrɔːkɪts+/ "eleven
rockets."

Clifford: [ɪɪˈflɛʔkʃən] /ɪmˈflekʃən+/ "inflection"
(= "infection")

Jenny: [ˈpiæˈɪŋˈgæɪɪs] /ˈplæɪŋˈgæɪɪs+/ "playing games,"

Labio-dental /m/ may also be an expression of the sequence /mr/:

Teresa: [gəʔsˈvæːndʰəˈmæːnd] /ˈgəʊsˌræːndəmˈræːnd/
"goes round and round"

Lip-rounding of /m/ is noticeable when the bilabial closure is released, in the transition to the next vowel. It may be caused by the proximity of /w/, and rounded [m̠] may itself be an expression of the sequence /mw/:

Clifford: [ˈwɛm̠wəzəuˈbɔːn] /ˈwɛmwəzəuˈbɔːn+/
"When was you born?"

Jenny: [m̠ˈwɛnɪʔ] /əmˈwenɪt/ "and when it..."

Ross: [ˈm̠anəðəˈmɛm] /əmˈwanəðəˈmɛm/ "and one of the men"

If the bilabial closure is not complete a frictionless continuant [β̞], with egress of air through both nose and mouth, may result and resonance in the naso-pharyngeal cavity. This is almost the same as a nasalized vocoid, differing from it in having marginal function, and in a smaller aperture at the lips:

Ross: [ˈgɔːtʃɪsɛɪfˈbeɪnɪ] /ˈgɒtmɪselfˈbeɪnt+/

"got myself burnt."

Tony: [ˈsɔːrɛʃ.ənˈtɛləi] /ˈsɔːrɛmɒnˈtɛlɪj+/

"Saw them on telly."

Non-nasal variants include bilabial plosives and the ingressive articulations described in the preceding section:

John: [ˈsɛ̃bʔsɪms̃] /ˈsɒbtəjms / "sometimes"

Philip: [pˈkʰä:nɛü] /bɛˈkɑ:nɛw/ "Meccano"

Kathleen: [ʃA.ˈʃaʃˈwɛʔks] /majˈmamˈwɛ:ks/ "My Mum works"

" : [ˈwʌsɪsˈnɛɪʃh] /ˈwɒsɪsˈnæjɪ+/ "What's his name?"

Double articulations are recorded, with closure at both bilabial and alveolar positions. In one case the two closures are simultaneous:

Tony: [m̠aɪˈaŋkʰv] /majˈaŋku/ "My uncle.."

In another, the bilabial closure is first - the unreleased^{hold} stage of a preceding /p/. This is held while the tongue forms a second closure at the alveolar ridge:

David G1: [ˌwɔʔˈapmns] /ˌwɒtˈapɛms/ "What happens...?"

Long syllabic /m/ may express more than one weak syllable; the sustained continuant may be 'separated' into perceptible segments by a rhythmic pulse in the speaker's voicing:

Philip: [ˈsɛ̃m̠m̠m̠m̠jts] /ˈsɛ̃m̠m̠m̠m̠jts/ "some of my mates"

11 Alveolar Nasal /n/

"Nan" /'næn/ "Newton" /'nuwtən/ "ain't" /'æjnt/ "Twenty one"
/'twenɪj'wan/

/n/ has allophones which vary with its phonetic context. In the neighbourhood of /ð/ dentalized variants may be found. Dentalized [ɲ] itself can be an expression of /nð/, or even of /ð/ after another nasal:

Jenny: [ap^hənðə'ɛə] /apənðə-'e:/ "up in the air"
Jackie: [ɪɲ.ə'k^xA.] /ɪnðə'ka:/ "in the car"
Philip: [dæ:ɲ'n'ɲɛ] /dæ:n'ðe:+/ "down there."

[ɲ] is also in free variation with [n] in some places:

John: ['ga:ɲn] /'ga:dən/ "garden"
Elaine: [mɔ'gɹæn.ɲ'dʌd̥ɪd̥^s] /maj'græn'daɪd+/ "My Gran died,"

A palatalized segment [ɲ] is found in the vicinity of /j/, and long [ɲ] may be an expression of /nj/:

Tony: [wɛɲjɜ'liɪɹəm] /wenji'laɪtəm/ "when you light them"
David Gr: [ənɲ.'kænɹ] /ənɲə'ka:nt/ "and you can't"
Vivienne: ['dʒæɲ:ɹɛ] /'dʒæɲjə, re/ "January"

This segment may be in free variation with [n] in places:

Teresa: ['ɛ.ɲjə'liɹʊ] /'əwniə'liɹu/ "only a little"

A comparatively rare palatal nasal is found here - [ɲ] -

once before an alveolo-palatal plosive and once in free variation:

Ross: [ðæɪ'kʰæp'gəʊɪɹʔ] /ðæj'kæn'duɪt/
 "They can do it..."

Elaine: [d̥ʰə'nɛʔ] /də'nəw+/ "Don't know."

A feature of Cockney is that words that have /nj/ in other forms of English - "news", "Newton" - invariably have /n/ alone here:

Jackie: [ˈn̥ɪzəd] /ˈnuwted+/ "Newton"

Robby: [ˈɑːftəmɪ'nəʊɪz] /ˈɑːftəmɪ'nuwɪz+/ "After my news."

A nasalized oral continuant is found for /n̥/, as for /m̥/ - [ɱ]:

Jeanette: [ˈe̥.ʒɪ't̥ɛlɪn'nlaɪ] /ˈəwnɪ'telɪn'laɪz+/
 "only telling lie(s)."

Jackie: [ˌɛwɪ'not̥] /ˌnəwɪ'not+/ "No, we're not."

Other segments recorded for /n/ at this age include a nasalized alveolar fricative [ɲ]; a lateral nasal [ɳ], and a voiced, nasalized, glottal or pharyngeal fricative - [ɦ]:

Vivienne: [ˈɪd̥ə'ɲAY] /ˌɪd̥ə'nəw+/ "I don't know."

Elaine: [d̥ʰə'nɪAY] /də'nəw+/ "don't know"

Elaine: [d̥ʰə'ɦə] /də'nəw+/ "don't know."

Much of Elaine's speech and that of other girls at this age - Vivienne, Kathleen, Jackie, Diane - is characterized by a voice-

quality which has pharyngeal resonance^{or friction}, similar to that in this fricative, but without much of its nasality (see above, 1.2). It is in these same speakers that many of the non-nasal allophones of /n/, both plosive and ingressive, are found:

Teresa: [dɛ'dɛ:] /da'dəw+/ "don't know."

Vivienne: [əd,wanz'ɔ̃n] /əd,wanz'ɔ̃n+/ "and one's John."

Jackie: ['dʒuːzəd] /'nuwtəd+/ "Newton."

Kathleen: ['kæθlɪdʰ] /'kæθlɪn+/ "Kathleen."

Long /n/ with syllabic function may express the presence of one or more syllables. As with /m/, a sustained continuant may be divided into separate segments by a rhythmic pulse in the speaker's voicing:

Vivienne: [ə'mæn̄.n̄ə,grɛɪŋ'kʰɛʔ] /ə'mænənə,grɪŋ'kəwt/ \

"a man in a green coat"

Jeanette: [kʰamə'lonwɪvə'gann̄'monʔstə'daɪdʰ]

/k'amə'lonwɪvə'ganənə'montstə'daɪd+/

"...come along with a gun and the monster died."

.v Velar Nasal /ŋ/

"banger" /'bæŋə/ "nothing" /'nʌfɪŋk/ "long" /lɒŋ/

As with the velar plosives, the quality of the velar nasal varies with the nature of neighbouring vocoids. A fronted articulation is found in the proximity of front vowels, and a retracted ^{variety} ~~from~~ will occur in the proximity of back vowels.

Again, however, these variations are not marked in this transcription (see 5.3vi). /ŋ/ never occurs word- or utterance-initially, and one rare case of a fronted velar nasal contoid in this position must be regarded as an allophone of /n/:

John: [ŋeɪpɪːʔɪ.sɛ, kʰAnəˈwæʔ, fɪŋz] /nijsʔˈis, kajnəˈwaɪt /, fɪŋz/ "and these, these kind of white things,"

In the verb and participle ending "-ing" the form /ɪn/ is the most usual one in Cockney. Cases of /ɪŋ/ may be conditioned by a subsequent velar, or are products of a more careful style of speech:

John: [ˈdɹɔːvɪn] /ˈdɹɔːrɪn+/ "Drawing."
 Tony: [ˈæɪkʰʊ, nɪnʰ] /ˈæɪkɔwˌnɪn+/ "acorning."
 Jenny: [ˈpɪæɪŋˈgæɪmz] /ˈplæɪŋˈgæɪms+/ "playing games"
 Ross: [ˈkʰamɪŋəˈlɜːŋ] /ˈkamɪŋəˈlɔŋ+/ "coming along,"

Although "thing" always ends in /ŋ/ in the forms /ˈfɪŋ/, /ˈθɪŋ/, the ending of "anything", "everything", "something", "nothing" is almost, though not quite, always /ˈfɪŋk/ or /ˈθɪŋk/:

Jenny: [ɛnɪ, fɪŋʔ] /ɛnɪ, fɪŋk/ "anything"
 Philip: [ˈnaθɪŋˈkʰ] /ˈnaθɪŋk+/ "nothing"
 Elaine: . [ˈsɛɪŋʔˈvɔŋ] /ˈsɛɪŋkˈrɔŋ/ "something wrong"

but

Tony: [æŋˈgɔt, naθɪŋ] /æŋˈgɔd, naθɪŋ+/ "ain't got nothing."

/ŋ/ does not appear to have ingressive allophones among this

group of speakers; though some non-nasal realizations are found they must be ascribed to the phoneme /g/:

Jeanette: [ˌfɪgk'ɪʔs'gʷɪd̥^s] /ˌfɪgkɪts'gʊd+/
 "think it's good."

/ŋ/ is occasionally found with syllabic function in a lengthened form:

Tony: [wɛŋ•'kʰazɛŋ,kʰəmz] /wɛŋə'kazɛŋ,kəmz/
 "when my cousin comes"

5.6 Liquids

1 Alveolar Lateral /l/

"London" /'lʌndən/ "silly" /'sɪlɪj/ "play" /'pleɪ/ "class" /'kla:s/
 "doll" /'dɔ:l+/ "Paul" /'pɔ:l+/ "Skittle" /'skɪtəl/

In initial and medial positions [l] is articulated with the tongue-tip pressed against the alveolar ridge and the bulk of the tongue lowered so that air escapes over one or both edges of the tongue. Initial and inter-vocalic /l/ is usually voiced:

Teresa: [mʌʔ'kʰalə] /mɒk'kalə/ "What colour..."

Philip: ['lɔ:lɪ,striks] /'lɒlɪj,stɪks/ "lolly sticks"

Where /l/ follows a fortis consonant in close juncture it is generally devoiced - [ɭ] - and after a fortis plosive it may be a voiceless alveolar^{lateral} fricative - [ɬ] :

Jeanette: ['bʌʔə,flʌɪ] /'bʌtə,flaɪ+/ "butterfly."

Kathleen: [ˌkʰæθlɪd̥h] /'kæθlɪjɪn+/ "Kathleen."

David Gr: [ä•'kɪɑ.m] /æ:'kla:s/ "our class"

David Gl: ['piæx.dnkiAimd] /'plæjdənklajmd/

"played and climbed..."

Clifford: [mɪ'dæd,tɪamin] /mɪ'dæd,kamin/ "My Dad come in"

However, /pl/ may be realized as a co-articulated segment [pɫ] in which the tongue is positioned as for [l] while the lips are closed as for [p]. The two articulatory stances are released almost simultaneously, so that there is little or no lateral friction, and the only auditory cue for /l/ is in the transition to the subsequent vowel:

Russell: ['plæx,t^saɪ] /'plæj,tajm/ "play-time"

John: [plæx'fʊtboʊ] /plæj'fupbow/ "play football"

This also happens rather less frequently with /kl/:

Teresa: [klɑ.s't^huə.] /kla:s-'tuw+/ "Class 2."

After /n/, /l/ may be realized as a nasal alveolar contoid with lateral release - [nɫ]:

Jeanette: [tɛ'ɛlin'nɫaɪ] /'telin'laɪ+/ "telling lie(s)."

Teresa: [m^ə'k^hɒnnɫeɪ] /m^ə'konliɪ+/ "McConnolly."

As well as the lateral continuant, a flapped lateral [ɫ] is occasionally found. There is also the alveolar tap [ɾ], which occurs only rarely as an allophone of /r/, so that confusion is not very likely if it appears for /l/:

David Gr: ['ɛvɪŋ'ʊɔ,k^xi.ɹs] /'levəm'ro,kits+/

"eleven rockets."

Teresa: [d ɤʊnɹ'ɹA:k^hɪm] /dɔwnt'laɪkɪm+/

"Don't like him."

The sequence /nl/ may be reduced to /n/ at times, and /l/ is occasionally replaced by /n/ or /d/ in less careful speech:

Tony: [ə'nu2kt'a2p] /ə'nuktap/ "and looked up"

Jeanette: [dʒ'ɛ'ɲaɪʔ,ðæ.ʔʰ] /da'naɪk,ðæt+/

"don't like that."

Clifford: [ʔəz,nʔʔ'mə .fɪŋz] /+əz,nut-'mo:fɪŋz/

"There's lot more things.."

Jeanette: [m'ɲɛ:,nɪn] /əm'nə:,nɪn+/ "I'm learning"

Clifford: [wə2p'hə't'ɪ2,dʒə'fɪŋz]/woppə'tɪt,də'fɪŋz+/

"What particular things?"

As was noted above (5.4v), /l/ may replace a sequence /lð/ and a single initial /ð/. It may also replace medial /t/, paralleling a similar distribution of the alveolar flap [ɾ]. This appears to be a feature of informal speech:

Clifford: [gə'læ:viʔ] /gə'læ:vɪt/ "Get out of it...!"

Dawn P: ['ʃæ,læ2pʰ] /'ʃæ,læp+/ "Shut up!"

Clifford I ['wɒlɪðə'ɪ'dæw.] /'wɒlɪð uw'duw+/

"What did you do?"

In the word "only", /l/ is almost invariably omitted in this group of speakers:

John: ['ɛ.ɔ'tʰɔ] /'əwnɪ'tuw+/ "only two."

Jeanette [tʰ'ɛ.ʒɪ'tʰɛlɪn'nlaɪ] /'əwnɪ'telɪn'laj+/

"only telling lie(s)."

Diane: ['ɛ.ɪ'dəwθɪɪ] /'əwnɪ'duwθɪɪ/ "only do three..."

Final /l/

Velarized or 'dark' /l/ - [ɫ] is produced by raising the back of the tongue towards the velum while the tip and blade of the tongue makes the alveolar contact, and the sides of the tongue are lowered as for [l]. This variety of /l/ occurs only in word-final position in Cockney, as in other forms of Southern English. It is however very often omitted in this position, particularly after the vowel /ow/:

Clifford: [ˈɹɒrɪzˈfaɪwɛɫks] /+ˈowɪjzˈfaɪwɛks/
"All his fireworks"

David Gr: [ˈpʰɪʔəˈboʊAɹ] /ˈpɪtəˈboʊap+/"pick the ball up."

Other speakers do have an /l/ here, when /l/ is inter-vocal i.e..

When /l/ has replaced a sequence /lɔ/ it may be velarized:

Jenny: [ˈɒʊlɔ̃ːˈfɛːz] /ˈowlɔːˈfɛːz/ "all her furs"

Elaine: [ˌnAɹˈo.ɫetˈAɹf] /,notˈowlətəj+/"not all the time."

Teresa: [ˌɒʊɫˈeɪtˈAɹm] /,owləˈtəɪm+/"all the times"

(where the lateral also has a voiceless fricative release).

Before /+/ or /-/the lateral is invariably velarized:

John: [ˈpʰɒʊɫ] /ˈpowl+/"Paul."

Elaine: [ˈdAɹɫ] /ˈdawl+/"doll."

though in most cases before open or external juncture /l/ is realized not as a lateral contoid but as a vocoid glide to back half-close (see 4.1 iv)3.1).

[ɹ] may have syllabic function:

John: [ˈfʊtˌbɔːlˈmeɪsɹ̩] /ˈfʊtˌbɔːlˈmeɪsəl+/ "football mostly."

Jackie: [ˈnɒkɪŋˈskɪtl̩ˈdaʊn̩] /ˈnɒkɪŋˈskɪtl̩ˈdaʊn/
"Knocking skittle(s) down."

Post-alveolar or Labio-dental Continuant /r/

"rockets" /ˈrɒkɪts/ "memory" /ˈmemərɪj/ "allright" /ɔwˈraɪt/

"drawing" /ˈdrɔːrɪn/ "favourite" /ˈfævjərɪt/

/r/ is for the majority of speakers at this age a post-alveolar frictionless continuant. The tongue-tip is curled back slightly in the direction of the roof of the mouth at the back of the alveolar ridge, though there is no actual contact between the tongue and the roof of the mouth, nor any friction.

Voicing usually accompanies this articulation, especially in inter-vocalic position and after voiced consonants:

Elaine: [ˈstɔːrɪz̩] /ˈstɔːrɪz/ "stories"

Kathleen: [ˈdrɔːrɪn̩] /ˈdrɔːrɪn/ "Drawing."

Vivienne: [ˈdʒən̩ˌrɪ] /ˈdʒən̩ˌrɪ/ "January..."

Ross: [ˈrɒsˌsmɪθ̩] /ˈrɒsˌsmɪθ+/ "Ross Smith."

Diane: [ˈrɔːləˌskæɪt̩s̩] /ˈrɔːləˌskæɪts+/ "roller skates."

The articulation described above may be accompanied by some lip-rounding or, more frequently, by secondary labio-dental articulation. In the absence of tongue-retroflexion this

labio-dental articulation may be the only cue for /r/, which is then a labio-dental frictionless continuant - [ʋ]. For some speakers, including not only the youngest member of the 9-year old group, Russell (8,2) but also one of the oldest, Teresa (9,10) this is their main if not only allophone of /r/. Some speakers have both articulations in free variation - Jackie, Clifford, David Gr - while others use the labio-dental variant only occasionally, in special circumstances such as following a /v/ or /f/:

Russell: ['vasöy] /'rasow+/ "Russell."
 " : ['vði? 'bīg] /'rajt 'big+/ "right big,"
 Teresa: [æ: 'vAɪdʒ ə, jəü] /æ: 'rawdə, juw+/ "How old are you?"
 Jenny: ['evvəfɪŋ²k] /'evrəfɪŋk/ "everything"
 Elaine: ['fpeɪ 'tʃæɪns] /'frij 'tʃæjns+/ "three trains"

[v] is, strictly speaking, a lateral articulation. The upper front teeth touch the inside of the lower lip, and air escapes without friction between the teeth and at either side of this central obstruction. If there is no contact between teeth and lower lip a non-lateral continuant [ɸ] results:

Jackie: [ɔɸə 'bīg. 'dʒAr] /orə 'big 'daw+/ "or a big doll."
 Russell: ['ɸɛɪd] /'red+/ "Red."
 John: ['ɸɔ, k^hɪ. 2^h] /'ro, kits+/ "...rockets?"

The voiced fricative [ʋ], occasionally found as a realization

of /vr/, may occur for /r/:

Diane: [ˈfæɪvəʔˈprɛʃgɹæm] /ˈfæjvrɛpˈpɹɛwgræm+/
"favourite programme."

Clifford: [ˈæbɪ] /ˈrobɪ/ "Robby"

Jenny: [ˌðeɪzˈæɪbə~] /ðɪjzˈrobə-/ "these robber,"

At this age /w/ appears only rarely in place of /r/: a rounded labio-dental [w] is found in some places:

Teresa: [ˈɪnɔ̃ːˈwəu] /ˈɪnəːˈwuw+/"in her room."(sic)

John: [ˌklɑːsˈfwɛɪ] /ˌklaːsˈfwɪj+/"Class 3."

Though the post-alveolar [ɹ] is the most frequently-occurring allophone of /r/ at this age (187 instances of [ɹ] in a 16-year old sample, compared to 95 of [v] and [ɹ] together), yet it is clear that /r/ is treated by speakers in this group as having a feature of 'labiality' which is as distinctive in some contexts as that of retroflexion. In support of this may be adduced the tendency of some alveolar segments, particularly /n/, to assimilate to a labial place of articulation - [m] or [ɱ] - before /r/:

Ross: [ˈfɪʃɹɛmˌɹɛɪl] /ˈfɪʃɪmˌrɪjɪl/ "fishing reel"

Teresa: [ˈvʌɪndʒəˈmʌɪndʒ] /ˈræːndəmˈræːnd+/
"round and round."

Terry: [ˈkɑːmɹɪjɪlɪˈplæɪɪ] /ˈkaːmɹɪjɪlɪˈplæjɪ+/
"can't really play it."

In addition, clusters of Consonant + /r/ are often realized as

David Gr: [b^ə'ræ:ɪk^h'ɪ.ɹ̥] /bə'ræjkit+/ "break it."

Linking /r/

/r/ may be used to link one vowel to the initial vowel of the next word, even though historically and morphemically speaking there should be no /r/ in this position. In this case it may be termed 'intrusive'. Linking /r/ seems to occur particularly after /ə/ and the vowels of the 'long' series - /i:/, /e:/, /æ:/, /ə:/, /ɑ:/, /o:/ :

Diane: ['nɔ:d^zə'ɪɑ.ɹ̥] /'no:də'rɪj+/ "Nor do I."

Vivienne: ['ɡenəɹævə'dɔə̃ɡ^h] /'ɡenərævə'dɔg /
"going to have a dog."

Teresa: [æ:'uAɪd^zə,jəʊ] /æ:'raʊdə,jʊw+/ "How old are you?"

Tony: ['nə.ɹ̥ɪz'məʊd̥] /'næ:rɪz'muʊd̥+/ "Now he's moved,"

Kathleen: [ɔ̃ɹ̥ɪɪn] /'drɔ:rɪn+/ "Drawing."

Tony: ['weɪ'sɔ:ɹ̥æ̃] /'wi:j'sɔ:rəm/ "We saw them"

In all these cases /r/ is intrusive. After /i:/, /e:/, /ə:/ and /ɑ:/ most cases of linking /r/ are not intrusive, since these vowels occur predominantly in syllables terminated orthographically by 'r'.

/tr/, /dr/

/tr/ and /dr/ are considered in this study as clusters of two phonemic elements, rather than as affricates, even though many of their realizations have phonetically affricate forms. The

reasons for this classification are considered in 5.81 below.

a) When these clusters are realized as [tɹ], [dɹ], a closure is formed by the tongue blade and tip, slightly retracted from the position for [t] and [d]. As the closure is released, the tongue-tip moves back and curls upwards slightly towards the position of post-alveolar [ɹ]. There may be some friction if the tongue moves away from the alveolar ridge slowly. This will be voiceless in the case of /tr/. For /dr/ voicing begins as the closure is released. These articulations may be accompanied by lip-rounding:

Jeanette: [tʃæɪnsɛt] /'træɪnsɛt/ "train set"

David Gl: [tɹiːs, fæmliː] /'triːs, fæmliː/ "Tree-house Family."

Jackie: [tʃɪldrən] /'tʃɪldrən/ "children"

Devoicing of /r/ is less marked in /str/: it may be slightly or fully voiced, and [t] is usually lenis:

Philip: [hɪstɹɪ] /'hɪstri/ "history."

Diane: [bæk, strɪk] /'bæk, strɪk/ "back stroke."

Ross: [stɹɪŋ] /'striŋ/ "string"

b) The clusters may also be realized as the affricates [tʃ], [dʒ], where the plosive closure is effected by the tongue-tip rather than by tip and blade, and the point of articulation

is towards the back of the alveolar ridge. As the affricate release takes place the tongue apartnfrom the tip remains in position while the tip moves slightly back. Again, lip-rounding may accompany the affricate in part or in whole:

Jackie: [ˈkʰanʔtʃɛɪ] /ˈkanttriːj/ "country"

Kathleen: [ˈfæk.tʃɛɪ] /ˈfæktriːj-/ "factory"

" : [ˈbädʒɪ,ɡaːd̪ˢ] /ˈbadri,ɡaːd+/ "budgerigar."

Jenny: [ˈbedʒʊm] /ˈbedrum/ "bedroom"

Here it is undoubtedly retroflexion that is the cue for /r/. In one instance of /str/ the presence of /r/ is conveyed by the retroflex articulation of only two segments:

Jackie: [ˈmɪnʔst̪o,ʃɐv] /ˈmɪnstrow,ʃɐv+/ "Minstrel Show,"

c) Other affricates in the alveolar region are found in words which have /tr/ or /dr/, though it is not clear whether phonetic units such as [t̪], [t̪̥], [d̪], [d̪̥] are distinct from /t/ and /d/ for these speakers without the all-important cues of context. To the analyst it seems that the retracted affricates [t̪̥], [d̪̥] are nearer to /tr/ and /dr/ than the rounded palato-alveolars or other affricates such as [tʃ]; a classification of convenience is made on these lines:

John: [ˈt̪̥ɛɪnɪnlaɪns] /ˈtrɛɪnlaɪns+/ "train lines."

Kathleen: [ˈd̪̥ɔːrɪn] /ˈdroːrɪn+/ "Drawing."

Elaine: [ˈfɹɛɪˈt̪̥ɛɪns] /ˈfriːˈtʃɛɪns+/ "three trains"

John: [ˈd̪̥ɔːvɪn] /ˈd̪̥ɔːrɪn/ "Drawing"

d) The realizations so far considered have been close-knit clusters. However /tr/ and /dr/ are quite often realized as relatively disjunct sequences, especially across word- or syllable-boundaries. Then the release of the plosive is accomplished, with perhaps aspiration or affrication, before /r/, which may be post-alveolar or labio-dental, partly or fully voiced, begins to be articulated:

Elaine: [wɪəd^hˈvʌk^hɪʔs.] /wɪəd(-)ˈrɒkɪts+/

"We had rockets,"

Tony: [ˈkʰʌnʔt^sˌvɛɪ] /ˈkʌnt(-)ˌrɪj / "country"

John: [ˈwʊd^hˌɹɛʔβ] /ˈwɔwd-rɔwb+/ "wardrobe,"

Vivienne: [ˈɔːfɔɹd^hˌɹɛʔb] /+ˈɔːfɔwd(-)ˌrɔwb/

"Old Ford Road"

Ross: [ˈsˌlɛdˌɹɛɪsən] /ˈsled(-)ˌrɛɪsən/ "sled-racing"

This 'separation' of the two elements in the sequence may also occur within a word. Voicing associated with /r/ commences after the plosive release, which is usually affricated, and may be of an affricated type other than [t^s] or [d^h]. It is not considered necessary to postulate open juncture between the two phonemic elements in this situation, since open juncture is associated with syllable-boundaries, and these disjunct sequences do not alter the syllable-division of the utterance within which they occur:

Teresa: [ˈd^hʊɹ̥ˌɔːvɪn] /ˈdɹoːrɪn+/ "Drawing."

John: [ʒiə'tʃɹi] /ðis'tri:/ "this tree"
 Teresa: [ˈgəʃp,tʃɹi.] /ˈgəʃp,tʃɹi+/ "Ghost-train"
 Ross: [ðe'dʒɹi] /ðe'draɪvə+/ "the driver."

5.7 Semivowels

The semivowels /w/ and /j/ are characterized by an essentially vocoidal articulation. For /w/ the tongue is in the position of a back close vowel and the lips are usually rounded - [ɯ] . /j/ similarly has the tongue-position of a front close vowel without lip-rounding - [i]. However in terms of syllable-structure the semivowels are consonantal, in that they appear initially or medially, before vowels. Their most important feature is probably their rapid glide from [i] or [ɯ] to the tongue-position of the next vocoid, and the fact that they are non-prominent in relation to the vocoids following them. In the allophonic transcription used in this study the symbols [j] and [w] or [ʝ], [ʷ] are taken to represent these two features of rapid glide and vocoidal non-prominence.

Labio-velar Semivowel /w/

For consonantal /w/ the tongue is positioned as for a back close vowel, such as the latter part of a relatively close allophone of /ow/. The lips are generally closely rounded, particularly when followed by a rounded vowel. In the articulation of /'wɔw/

"wall" or "wool", for example, the lips would be rounded throughout, though closer and tenser at the beginning and end. The most noticeable movement would be that of the back of the tongue, moving from above half-close to below half-close central [ɤ] and back again. /w/ occurs only initially and medially:

Jackie: [ˈfAəwä.ʔ] /ˈfajwə:k/ "firework"

Russell: [ˈwuɔ̃əˈdäü] /ˈwudʒəˈduw/ "What (did) you do...?"

Kathleen: [ˌɛvveɪˈwɔ̃iʔkˣ] /ˌevriːjˈwiːjk+/ "every week."

Before unrounded vowels the lips may be slackly rounded, or even loosely spread, though the tongue still retains its back close position. For this unrounded /w/ the symbol [w̥] may be adopted.

Vivienne: [ˈw̥Aʔˈkˣalə] /ˈwɒkˈkalə/ "What colour...?"

Jenny: [ˌw̥ɛnʔˈblaːɪnd˩˥] /ˌwentˈblaɪnd+/ "went blind."

Jeanette: [w̥ɪˈneɪ.] /wiˈneve/ "We never..."

After a fortis plosive with which it is in close juncture /w/ may be devoiced:

Jackie: [ˈtʰwɛnt˩˥] /ˈtwente/ "twenty..."

David Gr: [ˈkwɛʃɛnz] /ˈkweʃɛnz/ "questions"

Jenny: [ˈlæ²p̥wumɔ̃] /ˈlæppwumən/ "Lapp woman"

Labio-dental lip-formation may accompany a back close tongue position and lip-rounding, to give [w̥], for which the lips are rounded but the lower lip is pushed forward; the upper teeth approaches the lower lip without making contact:

John: [kɛA.s'fʊə.ɪ] /,kla:s'fwɪj+/ "Class 3."
 Clifford: [wɔ̃:nɪ'fʌ,ɪ] /'wɛ:nt'fan,ɪj+/ "weren't funny."
 David Gl: [wɪ'ð.stə] /wɪ'uwstə/ "We used to.."

Voicing for /w/ is sometimes nasalized for non-phonemic reasons, as in [w̃] or [w̃̃]:

Ross: [tʃʊt'saɪd'pɪsɪ] /wɛ'taɪd'pijsəs/
 " We tied pieces "

Jeanette: [wɪɪəd'dɪnə] /wɪjəd'dɪnə/ "we had dinner"

In unstressed syllables, weak vowels after /w/ are sometimes reduced, and may be elided, as in the first example above from Ross. A long back close rounded vocoid may be a realization of /wu/ or /wə/:

Jeanette: [wɪdɔ̃t'liɪ] /wɛdɔ̃nt'liɪ/ "We don t live..."
 David Gr: [wɪəd'friː] /wɪəd'friː/ "We had three"
 Russell: [əmwuːæt'tə] /əmwuːættə/ "and we had to"
 Ross: [wɛnɔ̃.ɪ'vʌnɪ] /'wɛnɔ̃wɪ'ranɪn/ "when I were running"

Some sequences of Consonant + /w/ may be realized as a single labialized segment:

Ross: [spɛɪbwɛɪ] /'spɪjɪbwɛɪ/ "speedway"
 Diane: [sɪwɪmən] /'swɪmən+/ "swimming."
 David Gl: [gæɪmzwɪvɪt] /'gæɪmzwɪvɪt/ "games with it."
 Clifford: [tɪθɪfwɛz,bliːdɪn] /'tɪθfwɛz,bliːdɪn+/
 "(My) teeth was bleeding."

Palatal Semivowel /j/

"year" /'ji:/ "yellow" /'jele/ "piano" /'pjæne/ "January"
/'dʒænjəri/

For consonantal /j/ the tongue is in the position for the front close vowel [i] and where /j/ has syllabic function it is this tongue position alone which identifies the phoneme:

Vivienne: [ikʰænʔ'i:] /jika:nt'i:/ "you can't hear"

Before a vowel, however, it is the rapid glide from this front close tongue position which distinguishes /j/:

Philip: [ˌvɥje'manɛi] /ˌowje'manij/ "all your money"

Teresa: [ˈjɛl.əːsabmɛ'vein] /ˈjeleːsabmɛ'rijn+/

"Yellow.Submarine."

Russell: [dɛjeˈlɛʂəʔ'skõv] /dɛjeˈlɛjk'skow+/ "Do you like school?"

If the tongue position is very close, palatal friction may result in a segment [ɟ]:

Jenny: [ˌˈtseyɟɛ] /ˌtuwje+/ "to you."

/j/ occurs predominantly in initial position, though it may also be found medially:

David Gr: [ˈsæijɛ'muːv] /ˈsæjje'muwv+/ "Say you move?"

In some cases it occurs that the close-front tongue position at the end of a vocalic glide to /j/ may have the rapid glide to a subsequent vocoid associated with consonantal /j/. This is not consonantal /j/, but a non-phonemic linking segment

between two vowels:

Jeanette: [ɪjædʒə'ɹæɪs] /ɪj,ædɛ'ræɪs+/ "He had a race."

/j/ generally has a fronting and closing effect on vowels that follow it. This probably accounts for "you" having forms in /ji/ as well as /je/:

Clifford: [jɜ,nəʔ] /ji,nəw+/ "you know."

Tony: [wɛnjɜ'lɑɪtəm] /wenji'lɑɪtəm/ "when you light them"

It may also account for fronted variants of /uW/ after /j/:

Jenny: [ɔjɔ̃.'wɔʔtʃ] /ɔjɜw'woʔ/ "Do you watch"

" : [wɔ̃d.'jɔ̃.də] /wɔdɛ'juwɛ/ "What do you do...?"

In "yes" or "yeah" /j/ has a variety of realizations. It may have the realization described at the beginning of this section, which may have a glottal onset in initial position - [ʔjœ] , [ʔjɛ•]. It may also have a plosive onset - [ʔjɛ:], - or be realized as a apalatal plosive - [jɛ•] ; there is also a rounded variant [jœ•]. All these realizations have the feature of palatal articulation in common.

After /j/ weak vowels are often elided or reduced before other vowels, when /j/ may perhaps be regarded as having syllabic function. A long front close vocoid may be a realization of /ji/:

Clifford: [jʊ'æytʰə] /ju'ævtə/ "you have to"

Ross: [ɪjɔ̃ʔɛsɛɪ] /ɪjɔwtɛsɪj/ "you ought to see"

John: [ɪsɛɪjæs] /ɪsɪjæs/ "See, you has..."

Clusters with /j/

In clusters of Fortis Consonant + /j/, /j/ may be a voiceless segment, usually with friction:

Kathleen: ['pʃænəs] /'pʃænəs+/ "pianos."

" : [fʃ'gʌʔə'brʌ,vä] /fʃə'gʌʔə'brʌ,və+/

"Have you got a brother?"

" : ['lʌs-,tʃə] /'lʌs-,tʃə:/ "last year."

Other clusters, such as /nj/, /dj/, may have a carefully articulated form [n_j], [d_j] and a somewhat reduced, monosegmental realization, as [n_j], [d_j]:

Clifford: ['dʒæn,jewəri] /'dʒæn,jewəri+/ "January."

Jenny: [d_jjü,wɒtʃ't^hele,vɪʒən] /d_ju,wɒtʃ-t^hele,vɪʒən+/

"Do you watch television?"

Vivienne: ['dʒæn,jɪ] /'dʒæn,jɪ/ "January"

David Gr: ['wɒdʒi'du] /'wɒdʒi'du/ "What do you do?"

The sequences /dj/, /tj/, /sj/, /zj/ are commonly coalesced or reduced to the phonemes /dʒ/, /tʃ/, /ʃ/, /ʒ/, both across word-boundaries and within the word (see 5.4 xⁱ, iV, and 5.11 i, ii). Forms such as /'dʒu/, /'tʃuwn/ have been heard, though not recorded, from these children for "due", "tune". The omission of the palatal feature in words like these, to give forms such as /'du/, /'tuwn/, popularly supposed to be characteristic of Cockney, was not noted in this study. However, /j/ was lost between nasals and /uw/ in certain words, giving

pronunciations /'nuwz/ "news"; /,muw'zɪjəm/ "museum"; /'muwzɪk/ and /'nuwzɪk/ "music", where more standard dialects would have /nɪ/ and /mɪ/ in these words.

/j/ may occasionally be replaced by the voiced affricate /dʒ/

In the second example given below this is the product of extended juncture:

Vivienne: [ədʒu'gʌʔənɪ] /ədʒu'gʌtənɪ/ "Have you got any..?"

Diane: [ˈstɑːtɪdʒɛstɛdɪ] /ˈstɑːtɪdʒɛstɛdɪj+/
"started yesterday."

5.8 Affricates

- 1 In articulatory terms affricates are characterized by a plosive articulation whose release is so slow that marked homorganic friction occurs immediately after the stop. In the material under discussion here we could exemplify: [pʃ, ʃf, ts, dz, tʃ, dʒ, tʃ, dʒ, ts, dz, kx, tʃ, dʒ]. However few of these have a sufficiently general distribution to entitle them to consideration as phonemic units. The main candidates for phonemic status on distributional grounds are [tʃ, dʒ] and [tʃ, dʒ] or [ts, dz], which can be considered as possible phonemes / tʃ /, / dʒ /, / tr /, / dr /.

a) /tʃ/ and /dʒ/ may occur word-initially, medially and finally, as in "children", "matches", "watching", "pitch", "job", "magic",

"George". /tr/ and /dr/, on the other hand, may occur word-initially and medially, but not word-finally - "trousers", "mattress", "drawing", "children".

b) /tʃ/ and /dʒ/ are close-knit affricates in all realizations. There is a potential contrast at word-boundaries between /tʃ/ and /t/+ /ʃ/, which may be a disjunct sequence, and in which the /t/ is often realized as the glottal stop:

Jenny: [ɐ'wɒtʃə'lɒʔ] /dʒ'wɒtʃə'lɒtʃ/ "I watch a lot"

Elaine: [ɪ'wɒʔʃɪəd'ɹɒŋ] /ɪ'wɒt(-)ʃɪəd'ɹɒŋ+/ "what she had
wrong."

On the other hand /tr/ and /dr/ may have close-knit or disjunct realizations within a word and at word-boundaries without any contrast (see above, 5.6iii).

c) In medial position the fortis affricate realizations of /tr/ are almost invariably glottalized. In this respect it behaves like any other medial sequences of Fortis Plosive + Continuant:

Ross: [ɪ'mæʔtʃəsɪz] /ɪ'mættɹəsɪz/ "mattresses"

Jackie: [ɪ'kʰanʔtʃəɪ] /ɪ'kanttriʃ+/ "country."

Medial /tʃ/, however, is not often glottalized among 9-year old speakers:

Russell: [ɪ'beɪtʃɪ'vɛ.ɪ'dʒ] /ɪ'biʃtʃɪj'rɔwd+/ "Beachy Road."

Tony: [ɪ'næɪtʃɐ] /ɪ'næɪtʃə+/ "Nature."

John: [mɪʃ'mɪtʃouʔz] /mɪs'mɪtʃowz/ "Miss Mitchell's"

/t̥/ is glottalized finally. In this respect then /t̥/ is like the single plosive elements /p/, /t/, rather than a sequence of two elements.

d) Thus, on account of their more general distribution, their more close-knit articulatory features, and their greater contrastive significance, as well as the characteristics that /t̥/ shares with single plosive consonants as far as glottalization is concerned, /t̥/ and /d̥/ may be regarded as single phonemic units. /tr/ and /dr/ are considered for the purposes of this work as sequences of two phonemic elements.

e) However, in phonetic terms there is much in common between the affricate realizations of /t̥/ and /d̥/ and those of /tr/ and /dr/. Confusion between the fortis and lenis members of these pairs is encountered widely in the speech of younger children in this study, and even occasionally among the 9-year olds, as the ensuing sections and IV, 4.6; V, 4.46 will show.

ii Palato-alveolar Fortis Affricate /t̥/

"chair" /'t̥e:/ "stitches" /'stɪd̥ɪz/ "pinching" /'pɪn̥t̥ɪn/
"watch" /'wɒt̥/

The plosive closure for /t̥/ is as for /t/, with the front of the tongue raised towards the hard palate in preparation for

the affricated palato-alveolar release:

Ross [t^səũ'tʃɛ.əz] /'tuw'tʃe:z/ "two chairs"
 Teresa: [tʃɛ:ni,tʃə+] /'fə:ni,tʃə+/ "furniture."
 Tony: [p^hɪntʃɛn,ɪ?] /'pinʃɪn,ɪt/ "pinching it"

The lips may be rounded slightly in this articulation, more so probably in the neighbourhood of rounded vowels, though rounding may also be unconditioned:

Jenny: [æ.tʃə] /'e:tʃə/ "hurt you."
 Tony: [næɪtʃə] /'næɪtʃə+/ "Nature,"

There is little variation in the articulation of this phoneme among 9-year olds. The plosive part may be reduced in prominence, or may be reinforced in medial position either by glottalization, or by a voiced alveolar plosive segment before the voiceless plosive stage:

David G1: [wɔtʃɛnɪ] /'woʃɛni/ "watch any...."
 Jeanette: [eɪ?,p^hɛɪ?tʃava] /'elp,pɪjtʃavə+/ "help each other."
 Elaine: [stɪdʃɪz] /'stɪdʃɪz/ "stitches"

The affrication may be less palatal and more alveolar - [tʃ]

John: [wɔtʃ t^hɛl.əɪ] /'woʃ'telliʃ+/ "watch telly."

More retracted articulations are presumably avoided because of the danger of these being confused with /tr/.

iii Palato-alveolar Lenis Affricate /dʒ/

"ginger" /'dʒɪŋdʒə/ "bridge" /'brɪdʒ/ "Jenny" /'dʒɛni/

There appears to be considerably more variation in realizations of the lenis affricate than of the fortis for this group of speakers. Alveolo-palatal variants are found:

Teresa: ['dʒɪn, dʒɛ] / 'dʒɪn, dʒə + / "ginger."

Diane: ['dʒɛnɛ] / 'dʒɛni / "Jenny"

There are more palatalized versions, and in one place a palatal voiced plosive - [ɟ]:

Elaine: [dʒɛs 'mɪsɪt, ɛ] / dʒas 'mɪst, ə + / "just missed her."

" : ['dʒo. dʒɪ.] / 'dʒowdʒɪ / "Georgie"

Jeanette: [ʒɛ 'nɛʔ] / dʒɪ 'net + / "Jeanette."

A purely alveolar affricate appears in initial position, where /dz/ may not occur:

Russell: [dʒɛs 'la. ək^xɪʔ] / dʒɛs 'laɟkɪt + / "just like it."

The palatalized segment [ɟ] presumably results from a wrongful analogy with the /dʒ/ that arises from a coalescence of /d/ and /j/:

Elaine: [ɛ 'dʒɛ.s.naɪ] / ɛm 'dʒas.naɟn + / "I'm just nine."

Retracted or post-alveolar affricates and sequences associated with /dr/ may occur in place of /dʒ/ or the sequence /dʒr/:

David Gr: ['wɒdʒɹə 'dɒu] / 'wodrə 'duw / "What did you do?"

Kathleen: ['bɑdʒɪ, ɡɑ: dʒ] / 'bɑdri, ɡɑ: d + / budgerigar.

ivienne

Vivienne: [t^sʔ.ɪdʒɪndʒəs] /tuwɪdʒɪnd-rəs+/
 "too dangerous."

In the form /'tadrɪgɑ:d/ given by Kathleen it may be that the replacement of /dʒ/ by /dr/ is a dialectal feature, and intended by the speaker, rather than an accidental variant^{as} in the other two utterances.

A devoiced /dʒ/ may be found in place of /tʃ/ : it is still identified as /dʒ/ by its lenis nature, and by the absence of glottalization in final position:

Philip: [ɪˈdʒʌ.ndlɪʃ] /ɪdʒɑ:ndlɪ+/"Chandler."
 Jenny: [ðəˈwɪdʒ] /ðəˈwɪdʒ/"the witch"
 Diane: [æ.ɪˈmʌdʒ] /æ:ɪˈmʌdʒ/"How much...?"

CHAPTER IV - THE SPEECH OF NURSERY CHILDREN

1.1 Relative Lack of Homogeneity in Nursery Speech

As in the previous chapter the procedure here will be to treat each one of the phonemic items in this form of English as it behaves in the speech of a group of informants: in this case the informants are from the Nursery Class at Fordway School, and are aged from 3,5 to 4,9. Emphasis will be placed on those areas where Nursery speech differs most markedly from the 9-year old terminal model. It must be recognized that there is a general but essential difference between the two forms of speech to be compared. Whereas the older children give the impression of sharing many common features of speech in a relatively homogeneous speech community, the younger group presents a much less unified picture. Not only is the speech of each child very unstable and variable in comparison with the mature model, but each individual speaker has peculiarities of speech which mark him or her off from the rest of the group. This is not to say that there are not definable characteristics of Nursery speech: such characteristics do exist and will be outlined in the following sections. However each child shows these characteristics in his speech in different ways. It is demonstrable, for instance, that young children overlap items in their vowel systems, but while one speaker

may overlap /a:/ and /o:/, as in:

Fern: ['dA.inə'sq.2ə'sləi2p'] / 'daɪnə'sa:-ə'sliɪp+/
"Dinosaur asleep!"

another will overlap two different items, as in:

Mark: ['tʃʊ.2tə'ænɪ2] / 'tra:tʃ'ænɪt+ / "Church, ainit?"

Reasons for such disparities among younger speakers are not hard to find.

a) Firstly, though all these children are developing along the same general lines towards phonological maturity, yet as was seen in II,1.lvi and elsewhere in Chapter II, this development proceeds at different rates and in slightly different ways in different children. It would be surprising if this were not so. Differences in development can also be shown to be due to factors such as sex, number and position in family, home background, the quality and quantity of adult stimulation and so on (II,2.1).

b) Secondly, these children have probably less motivation to sound like each other than have older groups. There is less truly social activity at this age, less true conversation between children: language is more concerned with individual expression related to the community than with communicating with the community (cf.II,6.1)§

c) Thirdly, although coming from the same geographical location and the same socio-economic background, these children have

been in school only a relatively short time, and their language is still largely modelled on that of parents and the immediate family circle, rather than on that of other children. Although the parents are natives of London and have a common linguistic background, yet it may be that the degree of regional accent in parents' speech differs from one family to the next. The teacher in charge of the Nursery Class at the time this study was started noticed that the mothers of Fern and of Trevor had a form of speech which was less strongly Cockney and more 'educated' than the mothers of other Nursery children. This may account for some of the idiolectal features noted in these children.

1.2 Informants

In presenting details of the children who acted as informants in the Nursery group it might be useful also to record some of the phonological peculiarities of each child along with their age and position in family. The children are in order of age at the time of their recording, youngest first.

1 Mark Gillard ('Mark'). Aged 3,5. 2nd of 2 children

Some vowel oppositions are frequently reduced in Mark's speech.

/a:/ may be found in place of mature /ə:/:

['lɛvde, dæʔ?]	/ 'lɛwde, dæ:t /	"load of dirt"
['tʃsü. ² tə 'ænɪʔ?]	/ 'træ:tʃ 'ænɪt+ /	"Church, ainit?"

Among the retracting vowels /əw/ is often confused with /ow/:

[¹ jɛlɛw ¹ bot ⁵ ɛw [•]]	/ ¹ jɛlɛw ¹ botɛw/ "yellow bottle"
[¹ lɪɪ ² ɛw ¹ wɔ̃]	/ ¹ lɪtɛw ¹ wan/ "little one"
[¹ lɪɪ ² ɛw ¹ sɛɪ]	/ ¹ lɪtu ¹ ɛw ¹ sɛj+/ "little horsey."

The short vowel /o/ commonly functions for Mark as a weak vowel in positions where older speech would have /ə/, and even in stressed syllables:

[¹ mæ ² nɔ̃ ¹ dɪ ² dɔ̃n ²]	/ ¹ mænz ¹ didont/ "Mans didn't."
[¹ mædɪsɔn]	/ ¹ medison/ "medicine"
[¹ bɪg ¹ ɔn]	/ ¹ bɪgon/ "big one"
[¹ ɔ ¹ ,vɔ̃bɔw]	/ ¹ o ¹ ,robow/ "Horrible"

In Mark's consonantal system there is no evidence of a phoneme /θ/. /ð/ in word-initial position is largely replaced by /l/:

[¹ læ ² wɔ̃nwɪv ¹ ,læ ²]	/ ¹ lætwanwɪv ¹ ,læt/ "that one with that..."
[¹ lɛ ² ɛ ¹ p ¹ læɪ]	/ ¹ le: ¹ plæjɪn/ "They're playing.."
[¹ wɔs ¹ læ ²]	/ ¹ wos ¹ læt/ "What's that?"

Though /s/ is established in isolated positions, it is replaced in certain clusters by another fricative, which may be labial before a labial consonant, or nasal before a nasal:

[² ɔ̃ ² ɔ̃ ¹ f ¹ wɔ̃nɔ̃]	/+ow ¹ ^s f ¹ wɔ̃nɔ̃ / "All swans"
[¹ jɛw ¹ f ¹ mɛlɪɪ ²]	/ ¹ juw ¹ smɛlɪt+/ "You smell it."
[ɛ ¹ ɪ ¹ mɔ̃ɔ̃nɪn]	/ɛ ¹ smɔ̃nɪn/ "this morning"

11 Peter Tuckfield ('Peter'). Aged 3,6. 1st of 2 children.

Peter's vowel system is relatively well established, there being few cases of consistent confusion between phonemes in neighbouring areas. /oj/ and /aj/ may overlap; His pronunciation of "toys" - ['tʃa.rz] - is interpreted by two other boys present at the same recording as /'tajs/ "ties".

In the consonantal system Peter has difficulty with velar articulations, so that /k/, /g/, /ŋ/ are commonly replaced in his speech by the alveolars /t/, /d/, /n/:

['dɔɪv 'feɪtʃə 'ʃɔ] / 'dɔtɪv 'fɪjtʃtət 'ɒf + / "got his feet
cut off."

[ɜɪsə 'd.laɪ] / ɪtsə 'glav + / "It's a glove."

[ɪɪz 'dʒɪn] / ɪjz 'dʒɪntɪn / "He's drinking"

/ð/ is replaced by this speaker with /d/, both word-initially and finally:

[,d̩ əs 'd̩ əd̩ əɪ] / ,dæs 'dædɪj + / "That's Daddy."

['ɪmʌnɪn 'ɪd̩ 'sɪ] / 'ɪmʌnɪn 'ɪd̩ 'sɪj + / "swimming in the
sea."

[,wɪd̩ ,wɪd̩ 'ɪpəʊs] / ,wɪd̩ - ,wɪd̩ - 'æpəʊs + / "with, with,
apples."

though a dental continuant is recorded in some places:

['əʊv :ð̩ 'bæ] / 'əʊvəð̩ 'bæt + / "over the back."

['nɛ :ð̩ 'dɪt̩ ,dɪts] / 'nɛ :ð̩ 'dɪt̩ ,dɪts + /
"(and) there (are) the dick-dicks(birds)"

111 Trevor Rees ('Trevor'). Aged 3,7. 1st of 2 children.

Much of the speech recorded from Trevor was unintelligible to the analyst, and did not lend itself easily to phonemic interpretation*. Those utterances which were transcribed and were able to be credited with some meaning revealed a number of confusions within both vowel and consonant systems. Among the short vowels /e/, /æ/ and /a/ are often confused, and may alternate with each other in certain positions:

['væɪʔɪnfə'daʔ;wɛɪn]	/ 'ræɪtɪnfə'dat,wɛn+ /
	"waiting for that one."
['ʔə²ɪnə'gəɪ'sɔA]	/ + 'avɪnə'sɪj'so: + / "having a see saw."
['ʔɪpʰən'zæm]	/ + 'ɪpən'zəm + / "open them."

In other words these three degrees of front opening are at this stage relatively undifferentiated for Trevor, and one super-segment or archiphoneme #A// can be postulated for all these vocoids (see 5.1 below).

Among retracting rounding vowels /ow/ overlaps in some places with the articulatory area of the more open-starting /aw/:

['lɛʔmɛɪ'tʰɔrkʰɪn'ɪʔ]	/ 'lɛpmɪj'tawkɪn'ɪt /
	"Let me talk in it"
[ɪnə'wɔʔ,tʰɔ]	/ɪnə'wawt,tə+ / "in the water."

There is also confusion of /əw/ with other vowels - /uw/, /æ:/ and /ow/:

* See Appendix B p. 617

[,Am'dəʊənɪ]	/,aɪm'dəʊənɪ+/ "I'm doing it."
[pəɪ,wɔ:ksɪn'nəʊs]	/ʃɪj,wɔ:ksɪ'nəʊs/ "She works in (the) house"
[ˈʔəʊ,pɛz]	/+ˈəʊ,sɪz/ "Horses"

These retracting vowels are evidently still in a somewhat undifferentiated state for Trevor.

As with Peter, /ɔj/ is not yet differentiated from /aɪ/:

[ˈbɪgˈbɔɪzˈbʊks]	/ˈbɪgˈbaɪzˈbʊks+/ "big boys' books"
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Trevor's speech is also characterized by some exceptionally long and exaggeratedly glided vocoids:

[ˈkʰɔŋgəˈvɛ.ɑ.ø]	/ˈkɔŋgəˈruw+/ "kangaroo."
[ˈtʰäɪgˈgäɪ.]	/ˈtaɪgˈgə+/ "tiger."
[ˈjəˈhɛɪs]	/ˈjes+/ "Yes."

In the consonants, Trevor has the velars well established, although in one or two utterances they are replaced by alveolars, either through a relapse to an earlier articulation, or through the persistence of the earlier articulation in a common word:

[ˈdæɪ,βɜːtˈɪl,jə]	/ˈdæɪ,wɪˈtɪl,jə+/ "They will kill you!"
[ˈtʰɜrkˈɪn,ɪtəˈdæɪn]	/ˈtawkɪnˈɪtəˈdæɪn+/
	"talk in it again."

/ʃ/ and /s/ are not differentiated at this stage of Trevor's linguistic development. The mature palato-alveolar [ʃ] does not occur in his recorded speech, and allophones that appear

in place of mature /ʃ/ are the same as appear at other times for /s/, including [θ],[ʃ],[ç]:

[ˈwəθɪnˈaʔpʰ]	/ˈwɒʃ(s)ɪnˈap+/ "washing-up."
[ˈnʌʔˈfɪnɪʃtʰ]	/ˈnɒtˈfɪnɪʃ(s)tʰ/ "not finished"
[ˌʃɪɪˈdʌʊnʔ]	/ˌʃ(s)ɪjˈdəʊnt+/ "she don't."

This speaker has not yet achieved mature articulation of affricates, either the palato-alveolar phoneme /tʃ/ or the post-alveolar cluster /tr/

[ˌdʒäsˈtʰɪɪʃə]	/ˌdʒ asˈtɪlʃə+/ "just kill you."
[ˈdʒasˌgɔʔtʰɪʃtʰ]	/ˈdasˌgɒtɪtˈəʊt+/ "just got it out."
[ˈtʃævəˈvɪs]	/ˈseveˈrɪjs+/ "Trevor Rees."

The fricatives /ð/,/θ/,/h/ are not found at all in the recording of Trevor's speech. /ð/ has a variety of substitutions (see 4.2iii).

iv Fern Smith ('Fern'). Aged 3,8. 5th of 5 children.

In Fern's speech the short vowels in the back region, /o/ and /u/, are sometimes confused or alternated, for example in the word "look" and in the reduced form of "going to":

[ˈl̩.ʔkʰ]	/ˈlɒk+/ "Look!"
[ˈlʊʔtʰəˈdɪs]	/ˈlʊtʰəˈdɪs/ "Look at this"
[gʏnəˈkʰɪʔpʰɪʔ]	/gʊnəˈkɪjppɪtʰ/ "going to keep it."
[ˈʃɪːzˌgɒnə]	/ˈʃɪjzˌgɒnə/ "She's going to...."

There is some overlapping of vowels in the front half-open to open region, particularly of /e/ and /æ/:

[¹ ẽ.nə,dã.ʔ]	/ ¹ ajne,dæt+/ "I know that."
[¹ tẽ:nnet ¹ of+ ¹ ãɸ]	/ ¹ te:nnet ¹ of+/ "turn that off."
[¹ dæʔs]	/ ¹ dæks+/ "Ducks."
[¹ tẽæwi]	/ ¹ tjæwi/ "cherry"

In comparison with Mark and Trevor, however, Fern's vowel system is well established.

Among the consonants only the dental fricatives /θ/,/ð/ have not been mastered by Fern. /ð/ is largely replaced by dentalized /d/,/n/,/z/ and so on, but since alveolars in her speech are generally dentalized most of the time, dentalization can not be considered to be contrastive:

[¹ geʔ ¹ t ^h ẽo ¹ dɔ.f]	/ ¹ get ¹ taw ¹ dɔf+/ "get told off."
[¹ gɔtẽ ¹ dAɪnə,sɔɔ]	/ ¹ gotẽ ¹ dajne,sɔ:+/ "got a dinosaur."
[¹ dæʔsk ^h Aɪndɔv ¹ sɔ ² kɜ]	/ ¹ dæws-kajndɔv ¹ sɔks+/
	"those kind of socks,"

v Andrew Marren (¹Andrew'). Aged 4,0. 1st of 2 children.

/əw/ in Andrew's speech has a starting-point which is lower and more retracted than its mature norm - [ẽ] or [ɜ] . This is the starting-point for some older realizations of /aw/, though for this speaker the glide does not move to so close and back a point as mature /aw/ :

['lʊkʰə 'lɛm, bʊʋʔs]	/ 'lʊkə 'lɛm, bəʋts /	"Look at them boats"
['smæʃpʰə 'dæɪʔ, ʒʊʒ]	/ 'smæʃ-pə 'tæɪt, əʋs+ /	"smashed potatoes."

There would probably be no contrast for Andrew of the pairs "boat - bolt", "bow - bowl", though no case is recorded in Andrew's sample of speech of a word which would have /aw/ in older language.

Word-initial /ð/ may be realized by Andrew as the dental fricative or continuant-[ð] or [ð̤]. Where other phonemes are substituted for it they are the same as the substitutions which appear in the speech of other children at this age - /d/, /lʃ/, /n/, /z/ (see 4.2 iv below). Word-final /ð/, however, behaves differently for Andrew, who instead of replacing it with /v/ as older speakers do, has the glottal stop [ʔ] in this context. This can be interpreted as /p/, /t/ or /k/ according to context as in 9-year old speech:

[,wɪʔmɛɪ 'mameɪ]	/ ,wɪpmɪj 'mamij /	"with my Mummy..."
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/θ/ is not recorded in Andrew's speech, though the voiceless dental fricative is a frequent allophone of /s/:

['jɛθʃ 'wɪɪ]	/ 'jesaɪj 'wɪl+ /	"Yes I will."
[ʔɪ, θɛb 'bʊʒʊn 'θəʋʒ]	/ +ɪ, seɪb 'brəʋn 'suwge+ /	"He said 'brown sugar'."

Initial /h/ is not common in Andrew's speech. It does occur once, but seems to require some effort:

[hə:həu:t^sə?; '2əuɡɪv' dæ2tə 'ju] /hə?huw?tə? 'uwigiv' dættə 'juw+/
 "Who..... give that to you?"

vi Tracy Gillard ('Tracy'). Aged 4,5. 1st of 2 children - sister of Mark (i above).

Although a year older than her brother, Tracy shares many features of speech with him. For her too /a:/ and /ə:/ may overlap, /a:/ replacing /ə:/ in some contexts:

['ɪnɪ'sa:'k^həv] /'ɪnɪ'sa:'kəw+/"in the circus."

['wam,bā^dz] /'wam,bə:d/"one bird"

In general Tracy's vocalic oppositions are more stable than Mark's. Her consonantal system is less well differentiated in one area, where there is little or no differentiation of /w/ and /r/. The bilabial semivowel [w] and the labio-dental continuant [v] appear freely in uncontrasted variation where older models have /r/ or /w/. Though the phonemic transcription gives [v] as /r/ and [w] as /w/, both segments are really allophones of a super-segment or archiphoneme //W//:

['wanzɪn:ə'w^uɒt^sə] /'wanzɪnnə'wɒtə+/"runs in the water."

['vɛmʔeɪ'fəunsem'wɪ:2ə] /'remrɪj'fəwnsem'wɒtə/
 "when we found some water"

[wɛnɪ2s'vɪn2ə,t^sə^vɛm] /wɛnɪts'rintə,tajm^t/
 "when it's winter time,"

Like her brother, Tracy frequently substitutes /l/ for a word-initial /ð/:

[¹ wɔsq̥. ¹ læʔ ^h]	/ ¹ wos, ow ¹ læt+ / "What's all that?"
[¹ 2m̥læɪ ¹ a:]	/ + ¹ ilæj ¹ a: / "Here they are"

For the article "the" she may omit the consonant altogether, giving a form /i/ or /ij/:

[¹ le:ɪɪ ¹ k ^h æwæns]	/ ¹ le:ɪj ¹ kærewæns / "There the caravans"
[¹ ædɪd ^h ɪ ¹ dɔg]	/ ¹ ædɪdɪ ¹ dɔg- / "How did the dog...?"

1 Lynn Cook (¹Lynn'). Aged 4,5. 2nd of 2 children.

Lynn's vowel oppositions are almost complete. There is only some confusion among the front half-open short vowels /e/ and /æ/, and /æ/ and /a/:

[¹ 2ægz]	/ + ¹ ægz / "Eggs."
[¹ 2ɛɪ ¹ ə ¹ hɔgsɪz]	/ + ¹ enne ¹ hɔw, sɪz+ / "and the horses."
[¹ ðæt ^h s ¹ t ^h ɒ ² psɪɪ]	/ ¹ ðats ¹ topsɪj / "That's Topsy"
[¹ lɪ ² ɔɔ ¹ k ^h æʔ]	/ ¹ lɪtɔw ¹ kat+ / "little cat."

Like Andrew, Lynn is a 'lisper' of /s/ and /z/, giving them dental fricative articulation:

[¹ θeɪwɔʔ ¹ ðætɪθ]	/ ¹ sɪjwɔt ¹ ðætɪz / "See what that is"
-------------------------------------------	---------------------------------------------------------------

Unlike Andrew, however, she has relatively controlled use of the phonemes /ð/ and /θ/, so that there is some overlap here of /s/ and /θ/, and of /z/ and /ð/:

[sən'əʊziθ] /sən'əʊziθ/ "St Osyth's"

[,ðeə'vɒqy'hævine'pɑ:t^sɪ] /,ðeə'row'hævine'pɑ:ti+/

"They're all having a party."

Though this speaker has a higher proportion of occurrences of /ð/ than younger children, she still substitutes other phonemes for it quite frequently: -, /l/, /d/, /n/:

[ʔə'ne:lə'sævz] /+ə'ne:lə'sælz/ "and there the sails"

['hæʊðə'dɔ²k,t^hə.] /'huwdə'dok,tə+/ "Who the doctor."

(= Doctor Who)

['ʔɛn:ə'hɒq,sɪz] /+ 'enneə'how,sɪz+/ "and the horses."

ii Deborah Cook ('Debby') Aged 4,6. Only child.

Debby's speech is relatively mature, in that every phoneme of the terminal model, with the exception of the rare item /ɜ/, is recorded in her speech. However the phonemic oppositions of mature speech are not regularly maintained in her speech. One particular departure from the model is in her frequent reduction of the short-long opposition in the vowels-pairs /e/ - /e:/, /o/ - /o:/ :

[ɛðæɪ'a.] /eðæj'a:+/ "There they are."

[baɪə'hezɔm] /baɪə'hezom/ "by the hairs on.."

[wɪ'fɔphæʊs] /wɪ'fjohæ:s/ "with your house"

[,ðɪs'stɔɪ] /,ðɪs'stori:/ "this story"

though in places the length of /o:/ is observed:

[^ufɔ̃] /'fo:+/ "Four."

lx David Leigh ('David'). Aged 4,7. 2nd of 2 children - brother of Jeanette in the 9-year old group.

David and the remaining two speakers of this group have well established and relatively complete phonemic systems, though their speech displays many characteristics of childish speech which are discussed in full in section 2 below.

David appears in his recordings, both in the Nursery group at the age of 4,7 and when a year older at 5,7 ('David II'), to be a shy boy. His voice is high-pitched and varies in quality, giving him the impression of being linguistically less mature than a closer analysis of his phonological characteristics reveals him to be.

The other children in the Nursery group are

. Margaret Knox ('Margaret'). Aged 4,8. 2nd of 3 children.

i Steven Spicer ('Steven'). Aged 4,9. 2nd of 2 children.

Steven was recorded in February 1968 at the age of 4,9 and again in October 1968 at the age of 5,5 ('Steven II').

Other informants

Recordings ^ew_Λre made of a number of children additional to the eleven presented above, but for a variety of reasons recordings of their speech were not suitable for transcription, or

did not provide anything like 50 utterances. Many of these children were shy of the recordist, or their speech was too quiet and indistinct to be subjected to phonetic transcription, or they were shouted down by the noisier and more energetic speakers. Some utterances were recorded from this source, and have been found to illustrate points of interest. They are therefore included in the material on which this account of Nursery speech is based. The speakers are all girls:

Denise Rawlings ('Denise'). Aged 3,11. 2nd of 2.

Kay Phillips ('Kay'). Aged 4,2. Size of family unknown.

Paula Evans ('Paula'). Aged 4,3. 2nd of 2.

Janis Lazarus ('Janis'). Aged 4,11. Size of family unknown.

Lynn Cook ('Lynn I'). Aged 3,10. The same speaker as above, recorded in February 1968. In this first recording she was shouted down much of the time by Fern. The second recording in September 1968 was much more fruitful, but some of the utterances from the earlier recording have been used.

2. Some Characteristics of Nursery Speech

2.1 Reduced Phonemic Systems

As a result of overlapping of phonemes, and confusions between items resulting in reduced oppositions, examples of which were noted in the above section, it will be appreciated that young children are operating with reduced phonemic systems, in which

there are less contrasts, and contrasts are less consistently observed, than in the mature model. The maximal oppositions within a child's speech are classified in terms of archiphonemes, and the ways in which mature phonemes develop from these less differentiated units is discussed at the end of this chapter (5.1, 5.2) and the beginning of the next. The archiphonemic model presented there is not, however, to be taken as a model of any particular child's speech, nor is any attempt made in the phonemic transcription used in this chapter to reflect these archiphonemic contrasts. With a speaker such as Trevor it might seem attractive to adopt a symbol //A// to demonstrate the confusions in his system between /e/, /æ/ and /a/. However for other speakers there may be confusion between /e/ and /æ/ and also between /æ/ and /a/, but none between /e/ and /a/. For these speakers then two more symbols would be necessary, say //E// and //E//, so that three archiphonemic symbols would be in use in place of three phonemic symbols, with no gain in clarity or simplicity. Many speakers confuse two phonemes in some places but contrast them consistently in others, so that a decision would have to be made each time a certain phonetic segment occurred as to whether it was the realization of a distinct phoneme, or the uncontrasted realization of the archiphoneme from which the phoneme is ultimately to develop. Each child having, as we have seen, individual

phonological characteristics, and characteristic confusions between phonemic items, it might be found necessary ultimately to set up several differing phonemic and archiphonemic systems, resulting in an individual phonemic notation for each child. This would clearly be a complex and confusing procedure, and would serve only to mask the fact that these children are all developing towards the same form of language, and are all using forms of language that are derivations of the same terminal model.

The alternative method of notation, which has been adopted here, using what is basically the phonemic transcription devised to account for 9-year old speech, also involves some difficulties of classification. For example, if a child has only occasional contrast between two vowels such as /e/ and /æ/ , or /æ/ and /a/, some way has to be found of deciding whether some segment such as [ɛ] in a word is to be classified as /e/ or /æ/, or whether [ə] is an instance of /æ/ or /a/. There are obvious dangers, given the confusions in the child's system, in talking of 'close allophones of /æ/' or 'open allophones of /e/', and thus suggesting that the child is operating a contrast when in fact there is none. The solution which has been adopted for this chapter and the next is to have recourse in any doubtful situation to the terminal model.

Thus, if a segment [ɛ] occurs in the word "head" it is classified as /e/, and if in "had" as /æ/. Some decisions arrived at in this way will inevitably be arbitrary, but will at least have the merit of consistency. Using this notation has the advantage of keeping in view the relationship of Nursery language to the older model towards which it is developing. It is possible that in some places a child may be made to appear more mature in phonological terms than he or she really is, but it is hoped that this impression will be corrected by the commentary of the text. It is important to remember that young children do speak to other people and that their speech is, among other things, a means of communication. By using the phonemic notation devised for older children we are in effect listening to the Nursery child with the ears of a 9-year old, and describing the impression that the 9-year old might carry away from a young child's speech.

2.2 Prosodic Features in Nursery Speech

Stress

The simple system of stress used for 9-year old speech (see III, 2.1) is unaltered for Nursery speech, with one exception: the limitation on the number of primary stressed that a word may carry is lifted. This means that primary and secondary stress will correspond more closely to the degree of prominence that

a syllable has. Many utterances of Nursery children have a high proportion of stressed syllables, and are nearer to a syllable-timed than a foot-timed rhythm:

David: ['væ; n' dæ: s] / 'ræ: n' dæs+ / "Rounders! "

Trevor: ['ʔa² ɣɪnə 'gæɪ 'gɔA] / + 'avɪnə 'sɪj 'so: + /
"Having a see-saw."

Peter: ['fʊʔ, bɔ. 'mæ. əns] / 'fʊp, bow 'mæns+ /
"Football mans."

David: ['weɔ 'ɪə 'feɪʔ] / 'wes 'ɪs 'fɪjt+ / "Where's his feet?"

Lynn: ['gɔʔə, nəʊ 't'hæɪ, tʃA] / 'gɔtə, nuw 'tɪj, tʃə+ /
"Got a new teacher."

1.1 Juncture

Allied with a high proportion of stressed to unstressed syllables in Nursery speech is a high proportion of extended and open juncture at syllable-boundaries. In 9-year old speech cases of extended juncture were few and tended to occur mainly at word-boundaries. Much more commonly, within an utterance a word-boundary would be marked by a single medial consonant, such as /k/ in:

Elaine: [dʒv̥ʔ 'lɑ.ɪ.k̥ əm] / dəwnt 'lɑjkəm+ / "don't like them."

In Nursery speech however word-boundaries are more likely to be marked by extended juncture:

Janis: ['ɪ, lɑ̃v̥əʔ 'k̥h̥ɛg̥ʔ] / 'ɪəj, lɑjk 'keg+ /
"I like egg."

Fern: [k^hei²p^hi²] /'ki²jppit+/ keep it.

Denise: [ɹiz'ti²ɪ²p^hɪnə'sleɪ²,p^ha²p,ɡäɹ,dæ:n]

ɹ iz'slippinə'sli²j²p,pap,saj,dæ:n+/

"He's sleeping asleep upside down."

Extended juncture is also found at syllable-boundaries within polysyllabic words, where not only plosives and fricatives, but also continuants which are not usually geminated may be lengthened, to produce sequences such as /rr/, /ll/, /ðð/:

Debby: ['mam:ei] /'mammi²j/ "Mummy"

Lynn: ['dɛb,bɪi] /'deb,bi²j-/ "Debby,"

Trevor: ['mæp²,c²ɪz] /'maŋk,kiz+/ "Monkeys."

Fern: ['æɹ,p^hɔ̃²·z] /'æp,powz+/ "Apples! "

Debby: ['nað:əwʌn] /'naððəwan+/ "another one."

David: ['æf:ə,wɛ] /'æfə,wan+/ "(an)other one."

Peter: ['wi²ɹ,bæv:ə] /'wil,bærre/ "wheelbarrow"

Trevor: [ɹal'leɹ] /+,al'lew+/ "Hullo."

Lynn: ['mæs,ste:d²] /'mas,stəd+/ "mustard."

It may also be that where glides to vocalic /w/ and to /j/ are followed by a rapid glide [w] or [j] on to a subsequent vowel, extended juncture can also be postulated here:

Debby: ['sɛw'weɪ'k^hudən²] /'sɛw'wi²j'kudent+/

"So he couldn't."

Tracy: ['seɪ,jəm'ine'zeɹ] /'si²j,jəm'ine'zuw+/

"see them in the Zoo."

Open juncture occurs predominantly at word-boundaries, rather than within the polysyllabic word:

Lynn: [t^sə'hɛɪ²t^s'lɛm] /tə'hɪjt(-)'lɛm+/
 "to eat them."

Paula: [ə'gʊd^s,wɑd^h] /ə'gʊd(-),wɑd+/"a good one."

Steven: ['bɪg'bæd²'vʊɔf] /'bɪg'bæd-'rɔwɪ/
 "Big Bad Wolf"

Fern: [ə'zælɪ,gæɪ²'vɔ.] /ə-'æli,gæɪt,ə+/
 "a alligator."

1 Tempo

In absolute terms the speech of children in the Nursery group is perceptibly slower than that of older children. Over a measured period of approximately nine seconds it was found that two speakers in the 9-year old group, Jenny and Ross, uttered 36 syllables of connected speech (taking pauses for breath and at the end of phrases into account: these were counted as one syllable each). Over exactly the same measured period of time, and using the same criterion for what constituted a syllable, two Nursery speakers had a relatively slow rate of utterance. Mark and Fern uttered 26 and 20 syllables respectively of connected speech. Apart from such quantitative differences, however, there are a number of other factors which contribute to an overall impression of reduced tempo in Nursery speech by comparison with older models.

a) The rhythmic unit of speech at this stage typically consists of a small number of syllables, often only one stressed syllable. The rhythm of Nursery speech is nearer to a syllable-based rhythm than the older model. This gives the impression of deliberate, emphatic delivery, and will obviously slow down the production of a given number of syllables.

b) Connected with this is a tendency to give full value to vowels in stressed and unstressed syllables. This is most noticeable in unstressed position, where the model language would have a weak or weakened form, but Nursery speakers use an unweakened vowel:

Lynn: [,ziʔjoð'vʊʊn] / ,zit-jo: 'rəʊn+ / "Is it your own?"

Mark: ['t^sʊt^hɛkɪzə. 'vɔniʔ] / 'tuw'tekɪzə: 'ronɪt+ /

"Two teddies are on it."

n : [ɪnɪz'bəʊvʊ] / ɪnɪz'bəɾəw / (not / 'bəɾə /)

"in his barrow"

c) These two factors are probably related to characteristic Nursery features in stress and juncture, and can perhaps be summarized as a tendency to deal with the syllable as the basic unit of speech. At this stage of development syllables are not linked together in large cohesive units, but are treated as discrete items which are probably easier to handle one at a time, as it were, than in a fluent sequence. The child has

largely mastered the component parts of the sentence but as yet lacks the skill to combine them with ease into a whole.

d) As we might perhaps expect in this type of syllable-by-syllable enunciation, phonotactic features of coalescence of phonemes are not marked in Nursery speech, except in those phrases that are relatively familiar and widely used by a speaker. Alveolar consonants /t,d,s,z/ are less likely to coalesce with a subsequent /j/ into /tʃ,dʒ,sʒ,zʒ/ across word-boundaries:

Mark: ['wʌdʒə,fɪŋkʰ] / 'wɒdʒə,fɪŋk-/ "What do you think..?"

Steven: [wʌf'gɔɹv'wɪdʒɛɹ] / wɪj'gotu'wɪdʒet+ /

"...we got to read yet."

though it is possible that coalesced forms may be learnt directly from older models, which may be the case in:

David ['wɔɹt,fɜ: 'næɪm,p'hɛɪɹ 'A] / 'wɒt,fɜ: 'næɪm,pɪjt'ə+ /

"What's your name Peter?"

where a form associated with rapid speech is delivered in a heavily stressed, emphatic or declamatory style, caused perhaps by anticipation of the joke's effect.

There is a great deal of distorted and non-standard speech recorded from these speakers, much of which is the result of coalescence or elision, but it is suggested that this is due to accidents in the production of speech, rather than to any

systematic modification of phonological base-forms, as is the case in mature speech:

David: ['pʰʊ2ləbɜː'gɪn,nɔ̃n] /'putləbi'gɪn,nɔn+/
 "Put the beginning on."

Debby: ['2əu,ʃ•ɪŋ'kɪf'wu'beɪ] /+ 'uw,ʃɪŋ'kiʃ'wu'biʃ+/
 "Who do you think he will be?"

Trevor: [pəɪ'wɔ̃:2ksɪn'nɔ̃ʊms] /ʃɪʃ'wɛ:ksɪn'nɛws/
 "She works in the house"

e) Some of the younger speakers in this group have not mastered some of the morphophonemic rules operating in connected speech, such as the alternation of /e/"a" and /ən/ "an" before nouns beginning with consonants and with vowels:

Fern (3,8) [ə'2æli,gæɪ2ʰ,ɜ•] /ə-'æli,gæɪt,ə+/
 "a alligator."

Denise: (3,11) ['dɛə2sə'wɔlə,dɛ•ɪ] /'detse'wɔlə,dæɪ+/
 "That's a holiday."

This, again, contributes to the impression of a slow, careful and somewhat deliberate style of speech.

f) A further contributory factor to the slowing down of speech is the difficulty that some speakers experience with certain phonemes and phoneme clusters. When the articulation of a sound or sequence of sounds is only recently acquired some segments

may have a longer than usual duration. For example, in
 Fern: [dæ'st.ɪŋ] /dæ'stɪŋ+/ the string.
 the /t/ is lengthened while the speaker prepares for the
 relatively difficult post-alveolar articulation of /r/. Some
 fricatives may have glided articulations, when the speaker's
 tongue moves from an approximation of the desired articulation
 towards a more correct position:

Peter: ['ɪnɪl'æʊmz] /'ɪnɪj'æ:s+/ "in the house."

Steven: ['næʔsə'ʃeɪ] /'nætsə'ʃɪj+/ "and"that's a 'she'."

2.3 Non-Systemic Features

1 Nursery Allophones

As the following sections will demonstrate Nursery speech is
 characterized by certain typical allophones which are not
 normally found in great numbers in mature speech. It is also
 marked by the absence of other allophones which can be
 described perhaps as involving a degree of articulatory
 sophistication. The medial pre-glottalized voiced segments
 [ʔb], [ʔg] , for example, as allophones of /p/, /k/, are complex
 in terms of articulatory features, combining the glottalization
 associated with fortis consonants and the voicing associated
 with lenis - features which the speaker has to learn first to
 use in contrast before he can learn to use them in conjunc-
 tion. 'Double' articulations such as [fθ], [vð] for /θ/, /ð/,

ingressive articulations [b],[d] for /m/,/n/ and the alveolo-palatal plosives [t],[d] are not found in Nursery speech; though these last two segments, together with the rounded labio-dental continuant [w], which is relatively rare at this age, are not associated with normal mature speech, yet they are relatively late to appear in children's speech - around 5 or 6 years of age. Among the vowels we may point to the rarity of glides to front close as allophones of /əw/, whose distinctive features at this age seem to be those associated with a retracting and rounding glide.

1 Voice-Quality

It is outside the scope of this thesis to consider voice-quality in any great detail, but mention can be made of the great amount of variation in voice-qualities among the Nursery group as compared with older groups. There is nothing like the similarity between speakers that was found with some 9-year old girls (III, 1.3:).^V Voice-quality among young children is probably governed to some extent by physiological factors, but many variations in voice in these recordings appear to be systematic, related to the subjects and attitudes contained in the semantic component of speech, and thus in this sense expressive. This may indicate the presence of learned as well as innate features in the child's handling

of voice-quality,

It would be dangerous to speculate further along these lines, particularly in the absence of any suitable means of classification of voice 'qualities and qualifications' (Crystal and Quirk, 1964) for children - though approaches to the problem of classification of adult voices have been made by Laver (1968), Catford (1964), Crystal and Quirk (1964).

3.1 Nursery Phonology - Vowels

In discussing the phonology of Nursery children we are dealing with a group of speakers who are already some way advanced towards the mature model of phonology outlined in Chapter III. A table or diagram illustrating the main allophones of each vowel item would give little more information than is presented in the table in III, 4.1, if this were done on the statistical basis of presenting the most common allophones of each vowel at this age, since these will be the same as at the older age. However, if we concentrate on what are the most striking differences between the two ages in vowel realizations certain points emerge.

1 Substitutions

There is much variation and fluctuation in vowel quality in Nursery speech, even in realizations of the same vowel in the

same word as uttered by the same speaker. One result of this is that from the point of view of the terminal model some vowels are frequently substituted for others. The direction of substitution varies for the individual speaker, as we have already noticed, but there are certain common substitutions that seem to be common to most of the speakers in this group. These can be seen in Table 4. The mature phonemes are down the left-hand side and the Nursery forms along the top. Filled-in squares represent more than five substitutions of a sound.

1 Prominent Forms

Certain glided vowels in Nursery speech have allophones which in older speech occur predominantly in prominent positions, such as in primary-stressed or utterance-final syllables. Quite often, however, these allophones occur in positions in the Nursery child's utterance which do not have any particular prominence. Of this type are the allophones of /ij/, /uw/ and /ow/ with relatively open starting-points - [ei] or [æi], [eü] or [æü], [ɔo] or [ʌo]. This may be due to the fact that the child learns more easily those forms which receive greatest stress or prominence in the model language (cf. the discussion of 'telegraphic language' in Chapter II, 1.211). It is probably also to these open allophones of /ij/ and /uw/ that is due substitution of /æj/ for /ij/ and of /əw/ for /uw/. /aw/ is also occasionally substituted for /ow/ (see 3.2 11,

Table 4. Vowel Substitutions in Nursery Speech

Mature Phonemes	Nursery Substituted Forms																					
	i	e	æ	a	ə	o	u	ij	æj	aj	oj	ew	uw	aw	ow	i:	e:	æ:	a:	o:	ə:	
i	1				1		1	3														
e	3	1														1						
æ			1		1														1			
a	2	3	3	1	4	3	1															
ə	4		1																	1	3	
o																			1	1		
u					1																	
ij	1	1														2						
æj		1	1																			
aj				1						1									4	1		
oj																						
ew	1		2	3	1	2			2								1					
uw					1																	
aw																						
ow																						
i:	2							2														
e:		1							1													
æ:		1	4	1					2													
a:			1	1																		
o:																						
ə:				1	3	1																

xxiv, xxv below).

11 Retracting and Rounding Vowels

Both /əw/ and /uw/ have allophones at this age that involve more rounding than the most frequent 9-year old realizations. Such rounded allophones are not universal in Nursery speech, but occur frequently enough to suggest that lip-rounding, together with a tongue-position in the back half-close or close region is an important perceptual cue to these vowels. /uw/ has some allophones that have a more truly back close end-point than is found among any 9-year old speakers. Unrounded variants of this vowel are relatively rare at this age. The fronted glides of /ew/ found in the speech of some 9-year old girls are also rare, occurring only a few times in the speech of one informant, Fern (see 3.2xxv, xxiv).

3.2 Vowel Phonemes

1 /i/

This short vowel is generally realized as in 9-year old speech. There are a number of closer and more fronted variants, both short vocoids, and glides from [ɪ] in the direction of Cardinal [i]: In some places these closer realizations may be associated with palatal or palatalized contours; in others they are unconditioned:

Debby: [,sewɪɪ'ɔ̃ɪɔ̃] / ,səwɪj'dɪd+ / "so he did."

Paula: ['wɔ̃d'ɪnɪɔ̃] / 'wɛd'ɪnɪt+ / "went in it."

David: ['eɪɔ̃ɪɔ̃'cwɪɔ̃'ɔ̃s] / 'ɪjɪtɪk'kwɪk+ /
"eat it quick?"

Mark: [ɪɔ̃'dɪɔ̃d] / ɪt'dɪd+ / "it did."

Tracy: ['ɪn,ɪɔ̃'ɔ̃] / 'ɪn,ɪt+ / "in it."

Most glides in /i/ however are to central position. There are also long unglided allophones, usually before /+/:

Margaret: [ʔy'wan'ɪəm] /əjv'wan'ɪm+/ "I've won him."
 Mark: [ɪ'ɛnɪə?] /ɪ'ænit+/ "ainit?"
 Peter: [pɪæɪ'wɔʃ,ɪ.n] /'plæj'wɔʃ,ɪn+/ "play washing."
 Trevor: [ɪ'nænɪ:z] /-ɪ'nænɪz+/ "in Nanny's."

Allophones of /i/ which are more open than half-close may be counted as cases of substitution by /e/. This is a relatively common occurrence in Nursery speech:

Fern: [, ʔəu'ɛðʒɪʰ] / + { uw'izet+ / "Who is it?"
 Lynn: ['lɛʔo·'k'æʔ] / 'letow'kæt / "little cat"
 Steven: ['2æstʰəü'fæʔ] / + 'es-tuw'fæt / "It's too fat"

A further peculiarity, not found in older speech, is an on-glide from a more open position than [ɪ] on to this position. This may be due to the fact that the child does not move his tongue quickly enough in the transition from a consonant to the tongue-position of the next vowel, so that there is a

short period of indeterminate voicing between contoid and vocoid. This feature has been found after voiced continuants:

Mark: [wɒs'ɫ̥ɪs] /wɒs'ɫɪs+/ "What's this?"

Tracy: ['wɪɪsɪ'vʌn,n̥ɪn] /'wɪɪsɪj'ran,nɪn+/

"Why's he running?"

/ɪj/

This vowel behaves very much as in 9-year old speech, with the exception of allophones with a more open and fronted starting-point than usual - [eɪ], [æɪ]. In the terminal model these variants were found mainly in utterance-final syllables and occasionally in prominent syllables that were not utterance-final. Among the younger speakers in the Nursery group, however, such allophones are found in all positions in the utterance:

Trevor: ['nɒ,d̥ɪ'vɪ'bk̥s] /'nɒ,dɪj'buks+/ "Noddy Books."

Mark: [t̥hæɪp̥hɔ̥t̥h] /t̥ɪjpot+/ "Teapot."

Steven: [ʔeɪz'äʔ,sar'dæ̥n] /+ɪjz'ap,sɔj'dæ:n+/

"He's upside down."

Denise: [d̥ə'nɛɪg] /d̥ə'nɪjs+/ "Denise."

Peter: ['lɛ:zɪz'dæd̥ɪ] /'lɛ:zɪz'dædɪj/ "There's his Daddy"

One speaker, Mark, seems consistently to use this open fronted allophone of /ɪj/, which can probably best be interpreted as a case of substitution by /æj/ as far as his speech is con-

cerned, since these more open variants are not conditioned by any obvious linguistic factors, and since the same speaker does make use of a narrower glide for the same phoneme in places - [ɹi] :

Mark: [ʔəv,sæɪ] /+ʔəw,sæj+/ "Horsey!"
 " : [,æɪz'pʰʊɹɪ?] /,æɪz'pɔwdɪt/ "He's pulled it"
 " : [sbɪn'ma:m'mæ'læɪd] /əsbɪn'ma m'ma'læɪd/
 "It's been marmalade"

Long unglided allophones of /ɪj/ are found:

Steven: [ənæɪ'kʰæɪɪ:] /ənæɪ'kæɪɪj/ "and they carry..."
 Fern: [ʔɹɪz,gɔnə] /ʔɹɪz,gɔnə/ "She's going to..."

The alternation of /i/ and /ɪj/ in some contexts was noted in 9-year old speech. In the Nursery group it is found that the two vowels may alternate in places where older speech forms give no precedent:

Denise: [ʔɹɪz'tɪɪ²p^oɪn] /+ɪz'slɪppɪn/ "he's sleeping"
 Tracy: [ʔəsɪɪ'lɪʔv,dɔg] /+ʔəsɪj'lɪtu,dɔg+/

"That's a (the) little dog"

Steven: [læs'gʊd'ɪɪnɪ?] /læs'gʊd'ɪɪnɪt+/ "That's good, ainit?"

"Really" and "Nearly" are both found at this age with forms in /ɪj/ rather than /i:/. The latter vowel is probably late in being established in children's speech (see iii below), and there are precedents for the alternation of the two phonemes in these words in mature speech. It is to be expected then that young children would prefer the form which fits in

with the longer-established features of their phonemic system:

Debby: ['nɪlɪɪ'tʰɛɪm] /'nɪjlɪj'taɪm/ "nearly time"

Steven II: ['æɪ'vɛɪlɪɪ] /'æjn'rɪjlɪj/ "ain't really"

iii /ɪ:/

Many cases of /ɪ:/ show a usage as in the terminal model:

Debby: ['pʰʔsə'brɛvə²pʰ] /'putɜə'bi:rap+/

"puts the beer up."

Margaret: ['ðæʔəɪ'zɪɜ] /'ðæʔsɪz'i:+/ "That's his ear."

Mark: [ˌɪɛbɪg'loʊɛɪ] /ˌɪ:ɪbɪg'lorɪj/ "hear big lorry"

Debby: [stæɪ'hi:ɛmbɪɪd] /stæj'hi:ɛmbɪld/

"stay here and build"

Andrew: ['dæ:n'ɪjA] /'dæ:n'i:+/ "down here."

However there are many other phonetic segments which have the same form as allophones of /ɪ:/, being long vocoids at above half-close central of front or glides from there to centre - [ɪ:] or [ɪɛ] - which occur in contexts where /ɪ:/ would not normally be found:

Trevor: [ʔɪ'næɪɪz] /+ɪ'næɪɪz+/ "in Nanny's."

Fern: [ˌɪɪzˌgɔnə] /ˌɪɪzˌgɔnə/ "She's going to"

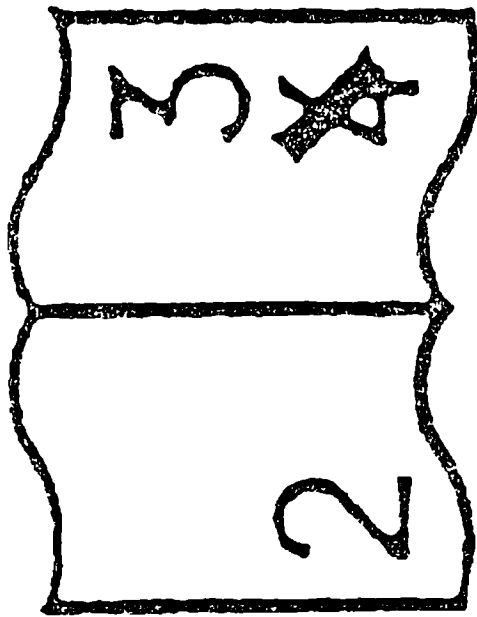
Debby: [ˌoʊ'kʰæɪɪn] /ˌoʊ'kæɪɪjɪn/ "all carrying"

Denise: [ˌɪɪɪgɔʔ'dzɑ:məs] /+ɪɪsgut'dra:məs/

"He's got 'jamas"

PAGINATION ERROR

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This suggests that the segments [ɪ:], [ɪə] are not yet at this stage completely contrastive, and that the phoneme /i:/ is not as completely established as it is to become at later stages of development. The pronouns "he", "we", "she" are found in some places with a long unglided vocoid or glide to centre similar to allophones of /i:/:

Lynn: [wɪ: 'gɔʔə, nɛŋ 'tʰeɪ, tʃA] /wɪj 'gɔtə, nuw 'tɪj, tʃə/
 "we got a new teacher."

Fern: ['wɪəgɔʔ 'nɛŋ] / 'wɪjgɔt 'nuw/ "We got new..."

Denise: ['ɪ:, bɛɪ 'kʰə. o. dʔ] / 'ɪj, bɪj 'kəwd+/
 "He ('ll) be cold!"

Fern: ['ɪ:z, gɔnə] / 'ɪjz, gɔnə/

It may be that these forms arise by analogy from forms such as "we're" - /wi:/ in the mature language - in which case they could be interpreted as /wɪj/ or /wi:/, /ɪj/ or /i:/. Certainly they must be considered as products of a system that does not have a fully contrastive opposition of /ɪj/ and /i:/.

r /ɪl/

In the great majority of cases /ɪl/ before consonants and before /+ʔ/, /-/ behaves as in the 9-year old model. It is a vocoid glide from [ɪ] to back half-close to close, which may or may not be followed by [ɹ]:

Paula: ['mɪɹʔ 'mɛ.n] / 'mɪlp 'mɛn+/ "milkman."

Peter: [ˈwɪɹ̥, b̥ævɪə] /ˈwɪl, bærrə/ "wheelbarrow"

Andrew: [ˈbɪɹ̥ɹ̥dɜːs] /ˈbɪldɪts/ "buildings"

A triphthongal glide does not appear to be contrastive:

Lynn: [ˈwɪnˈmɪɹ̥ɹ̥] /ˈwɪnˈmɪl+/ "windmill"

In one case Trevor has a usage that is not that of older speakers, in that clear unvelarized [l] is allowed to occur syllable-finally before a consonant:

Trevor: [ˈdævzɹ̥ɹ̥tʰɪlɹ̥] /ˈdævzɹ̥ɹ̥tɪlɹ̥/ "Those, they
kill you."

" : [dæɹ̥, βɹ̥tʰɪl, ɹ̥] /ˈdæɹ̥, wɪtɪl, ɹ̥+/

"They will kill you."

At this point Trevor is operating with a phonological rule that permits clear [l] finally. This is presumably a maturational stage in the acquisition of adult phonological usage of final /l/, similar to one in the developmental process outlined by Hutcheson (see II, 7.2.2). These two utterances probably represent a 'relapse' by the speaker to a somewhat earlier stage of phonological development. He had seen a picture of some bees in a book, and became very agitated at the prospect of being 'bitten' by them. Under the pressure of this excitement doubtless he reverted to an earlier stage, not only with regard to the treatment of final /l/, but also substituting /t/ for the velar /k/, which elsewhere he is able to articulate adequately.

v /e/

As with older speakers the most usual realization of /e/ at this age is a short front vowel at half-open or above. Glides to a more central or a closer position occur in prominent and utterance-final syllables. Rounded and slightly centralized vocoids are occasionally found:

Paula: [mɔ̃ˈdʒɛniædətʰɛnʔ] /majˈdʒɛniædɐˈtɛnt-/

"My Jenny had a tɛnt,"

Steven: [ˈnɛmwiːiˈgɔ̃ʔ] /ˈnɛmwiːjˈgɔt/ "and then we got..."

Peter: [ɐˌnæʔsˈɪɛəd] /ɐˌnætsˈred+/ "and that's red."

Trevor: [væ̃nˈdæ̃m] /ræːnˈdem/ "round them..."

As at older ages too, closer variants are recorded, and these are classified as /ɪ/ if they are raised to half-close or closer:

David: [ɐˈbɪgˈfæʔəd] /ɐˈbɪgˈfætɪd+/ "a big fathead"

Debby: [ɔˈvɪɪʔdɪn] /oˈraɪtɪn/ "all right then,"

Whereas open variants of /e/ were relatively rare among older speakers, they are found quite frequently among Nursery children. These variants, which may be almost completely open or, more commonly, in the region of [æ], coupled with allophones of /æ/ which are raised to half-open, suggest an incomplete differentiation of the phonemes /e/ and /æ/, and even of /e/ and /a/, in some children's phonological systems:

Fern: [həɪ: 'fʊɛnd] /hə? 'frend+/* "her friend."
 Lynn: ['2ægz] /4'ægz+/ "eggs."
 Tracy: [t^suɪz 'bæ^fd^{ts}] /tuɪz 'bæd+/ "to his bed."
 Fern: ['vɛd 'tʃæwɪ] /'red 'tʃæwɪ/ "red cherry"
 Trevor: ['2ɛp^hən 'zAəm] /+ 'ipən 'zəm+/ "Open them."
 David: ['sɛ?nə 'wəʊ] /'setnə 'wow+/ "sat on a wall."
 Lynn: [,k^xɛŋ 'gɛlən •ə 'bas] / ,kɛŋ 'gelonnə 'bas /
 "can get on the bus"

71 /e:/

As in mature speech the length distinction is often lost in the pair /e:/ - /e/, reducing the long vowel to its short counterpart. In this particular sample /e:/ was weakened more frequently in Nursery children's speech than in that of the older group. A short vocoid of the type [ɛ̥] or [ɛ] was found 20 times in place of /e:/, while of long or glided allophones there were 22 instances. The ratio is almost 1:1. For 9-year old speakers on the other hand 19 instances of [ɛ̥] or [ɛ] were counted, to 36 long or glided realizations of the vowel - a ratio of 1:2 (see also Table in V, 3.21). This is suggestive of a relatively late acquisition by children of the contrast /e/ - /e:/ :

Fern: [dɛz 'ɪ: 2 'lɔ?g] /dez 'ow- 'lots/ "There's all lots..."

Debby: [weðə'steʊns, ä:] /weðə'steʊns, a: +/

"where the stones are,"

Steven: ['wɔɪjə'ðe] /'waɪjə'ðe: +/ "while you're there,"

When long monophthongs and glides do appear in Nursery speech it seems to be predominantly in those positions where lengthening and gliding are favoured, such as open final syllables and prominent stressed syllables within an utterance:

Lynn: [,in'leɪ] / ,in'le: +/ "in there?"

Margaret: ['tʃeɪz] /'tʃe:z +/ "chairs."

Tracy: ['le:vrɪ'kævəwəns] /'le:vrɪ'kævəwəns +/

"There the caravans."

Andrew: ['dæ:vrɪð'gʊvə'dæ] /'dæ:vrɪz'əvə'ðe: +/

"There he is over there."

Open allophones of /e:/, or substitutions of the phoneme by /æ:/, were found to be infrequent, except in the speech of Tracy:

Tracy: ['dœvrɪn'læ] /'duvrɪn'læ: +/ "doing there?"

" : [a'pɪæ:wɪf'dæg] /a'plæ:wɪf'dog +/ "up there with a dog"

" : ['lævrɪnə'bœvə?] /'lævrɪnə'bœwt +/ "They're in a boat."

11 /el/

This sequence behaves quite regularly in Nursery speech by the standards of the terminal model. Even for Trevor, who

realized /ɪl/ before consonants as an unorthodox [ɪl] , produces a normal vocoid glide from half-open front to back half-close or slightly lower - [ɛɾ]:

Trevor: [ɪ'2ɛɾ2,p^hɪz'mɛnz] /+ɪ'elp,pɪz'menz+/
 "helps mens."

Paula: [ɪ'An.ɪ^hɛɾjɔ'mamɛɪ] /ɪ'anjɛɪ'teljɔ'mamɪj/
 "I'm going to tell your mummy"

Andrew: [ɪz'wɛɾ] /ɪz'wel+/ "as well."

11 /æ/

Variation in the length of this phoneme is governed by the same conditions as were found to apply in 9-year old speech. Long or glided vocoids are found for /æ/ in utterance-final syllables, before medial clusters of Nasal + Voiced Consonant, whether or not these occur at word-boundaries (cf. III, 4.3 viii):

David : [f'ɪgɔʔɛbæ.ɪ'læɪ2] /fe'gotɛbæ:t'læt+/
 "Forgot about that."

Peter: [ɪ'ɛuvɪdɛ'bæɪ2^h] /ɪ'ewvɛdɛ'bæk+/ "over the back."

Mark: [ɪ'wɔsɪ'læ.ə] /ɪ'wɔsɪ'læt+/ "What's that?"

Paula: [ɪ'2ɛɔ.ɪ'mæɪs.] /+ɪ'ow'mæns+/ "all mans,"

Fern: [ɛ'gɹæm.maɪ] /ɛ'græm.ma:/ "a grandma"

Margaret: [ɪ'p^hæ:n,dæ] /ɪ'pæm,dæ+/ "Panda."

Andrew: [ɪ'gæ:myɪzɪz] /ɪ'sænwɪdʒɪz/ "sandwiches"

/æ/ is liable to overlap with both the closer /e/ and the more open /a/ in Nursery speech. Just as it was shown in v above that words with /e/ could have a form with a vocoid [æ], and words with /æ/ might take a vocoid [ɛ], so it can be shown that [a] may be found in place of /æ/, and [æ] in place of /a/:

- Trevor: [ʔa²yɪnə'gəi'gɔA] /+ʔavɪnə'sɪj'so:+/
 "having a see saw."
- David: [ʔblaæ²kɪ] /'blak+/ "black."
- Lynn: [ʔə²sɪtʰA²psɪɪ] /'ðats'topsɪj/ "That's Topsy"
- Fern: [ʔənə'dæ.²] /'aɪnə'dat+/ "I know that."
- Mark: [ʔsəkˣændə'bʊɪ²ɔ] /'səkændə'brɪɔ+/
 "stuck under bridge."
- Tracy: [²æn:ɪɪ'æ²və] /+ænnɪj'ævə/ "and the other..."
- Steven: [ʔdˣædɪɪ,wɪn] /'dædɪj,wæn+/ "Daddy one."

x /æ:/

The relationship between /æ/ and /æ:/ differs somewhat from that of /i/ and /i:/ or of /e/ and /e:/. /æ:/ occurs more frequently than the other two long vowels (85 occurrences in the sample of Nursery speech, to 14 of /i:/ and 44 of /e:/) and is contrastive in more contexts than these two with the corresponding short vowel /æ/. It is therefore to be expected that this contrast will be established in children's speech at

at a relatively early age, and that features such as length or glide which govern the contrast will be handled by the Nursery group in a more mature way in these items than in closer vowels. The only important differences that are found between 9-year old and Nursery usage are in an number of glides to close central position - [ɜ] - and a higher proportion of glides to back of centre, with lip-rounding relatively pronounced in the later part of the glide:

Lynn: [ˈvaɪndɪʔəˈvæ.ɜ̃nd] /ˈraɪndɪtəˈræ:nd+/
 "wind it around."

David: [ˈsɛəvæ.ɜ̃ɪ] /ˈsæ:ræ:s+/"it's her house."

Peter: [ˈɪnɪl'æʊmɜ̃tʃ] /ˈɪnɪj'æ:s+/"in the house."

Steven: [ˈsɛlɪnləˈkʰæʊ] /ˈsɛlɪnləˈkæ:+/ "selling the cow."

Trevor: [ˈæʊt'æʊmɜ̃] /ˈæ:t'æ:s/"out (of the) house"

The distribution of different realizations of /æ:/ is largely a matter of idiolect at this age. Paula, for instance, has a long unglided vocoid [æ:] almost exclusively. Debby's recording contained a high proportion of glided vocoids - [æʊ] - though this may be due to the fact that she was telling a story throughout most of this recording, so may have been using features of formal speech. Steven's speech is marked by a number of cases of /æ:/ weakening to /æ/, while Lynn's speech shows a high proportion of glides to close central or front of central - [æ̃]:

- Paula: [gɒn'a²p,næ̯.ɪæɪ] /gɒn'ap,næ:ɪræj+/
 "gone up now, eh?"
 [ɪʔæɪsɪz] /ɪæ:sɪz+/ "houses."
- Debby: [brɪd'maɪhæʊs] /bɪld'maɪhæ:s+/ "build my house."
 " : [ɪ'bləʊ'jɔ'hæʊs] /ɪ'bləʊ'jɔ'hæ:s+/ "blow your house."
- Steven: [əɪ'bæ̯tðə'd²væ̯gən] /əɪ'bæ̯tðə'dræ̯gən+/
 "about the dragon."
 " : [ɪæ̯təvɪz'mæ̯θ] /ɪæ̯təvɪz'mæ̯θ/ "out of his mouth"
- Lynn: [ɪθmæl,æ̯²təvɛ̯t] /ɪsmel,æ:təvet+/ "smell out of it."
 " : [ɪdəʊn²,gə̯ɪ'væ̯²n] /ɪdəʊnt,gəw'ræ:n+/
 "don't go round."

It is interesting to see that although Debby generally gives "house" a form [ɪhæʊs] or [ɪhæʊs], ^{only} occasionally using a long unglided vocoid, in "down", the preposition and adverb, she invariably has [æ:] :

- [dæ:nɪə'tʃɪmblɪ] /dæ:nne'tʃɪmblɪ/ "down the chimney"
 [ɪp^hu²nɪz'fʊt,dæ:n] /ɪputənɪz'fʊt,dæ:n/ "putting his foot
 down

The word "our" invariably has the form /æ:/, but the sequence /æ̯ə̯/ may be found in some less common words:

- Margaret: [ɪɑ:ftæ:ɪ'mɪk²k¹] /ɪɑ:ftæ:ɪ'mɪlk+/ "after our milk."
 " : [ɪt^səʊə] /ɪtæ:ə+/ "Tower."

x /æj/

The starting-point of this vowel is rather variable for Nursery speakers in comparison with the 9-year old norm, and may move from front open to above half-open. There is no real systematic departure from the mature norm for this vowel:

Peter: [ə'dʒæɪ] /ə'dæj+/ "again."

Andrew [ʔə'lɔŋ'lɔŋ'waɪ] /+ə'lɔŋ'lɔŋ'wæj+/

"A long, long way."

Trevor: ['dɪɪʔ'væɪɪʔ] /'dɪs'ræjs+/ "this race (?)"

Mark: [dʒɪ,wəʊnʔ] /dæj,wəʊnt+/ "they won't."

Denise: [ə'wɔlə,dʒɪ] /ə'wɔlə,dæj+/ "a holiday."

The starting-point appears to be well fronted, presumably to avoid confusion with /ij/. The overlap of /ij/ and /æj/ in Mark's speech was noticed in ii above. A peculiarity of this phoneme at the Nursery stage is its occurrence in some demonstrative forms, "they" and a cognate form "theyse" being used where older children would have "them", "these", "those":

Fern: ['wɪʃ'dʒæd,dæɪz~'dæʔs] /'wɪʃdʒæd,dæjz'dæks+/

"Wish I had theyse ducks."

Mark: ['wɒdʒə,fɪŋk'ɪlæɪz,aɪ] /'wɒdʒə,fɪŋk'ɪlæjz,aɪ:/

"What do you think theyse are?"

Trevor: [fə'wænə'dʒæɪ] /fə'wænə'dæj+/ "for one of they."

In general this vowel has a very pronounced glide: in final open syllables the closure may be so extreme as to produce

non-phonemic friction:

Fern: [ə'sanəɪ,dæ.i.] /ə'saniɪ,dæj+/ "a sunny day."

" : [tʰə'ɔlədæɪɪ] /tə-'olədæj+/ "to holiday."

xi /æɪ/

No real differences have been found between 9-year old and Nursery usage in this item. There is one interesting example of assimilation, where a glide to vocoid /ɪ/ in one syllable creates the vocoid glide associated with /æɪ/ in the following syllable:

Paula: ['wɛwɪ'bæɪ] /'wɪɪ'bæl+/ "wheelbarrow"

ii /aɪ/

/a/ may be replaced by closer vocoids that are regarded as instances of /æ/ or /e/:

Tracy: ['kʰɛmz'əʊvə] /'kemz'əwvə+/ "comes over,"

Trevor: ['Aɛŋgɔʔ,wɛnə'deɪz] /'aŋgɔt,wenə'diɪz+/
"I've got one of these."

(For other examples see 3.2viii above). /wen/ is Trevor's standard form of the word "one"; he uses it seven or eight times in his recording. Some instances are found of vowels that are far removed from /a/ in place of the item, including /o/, /əw/, possibly /u/:

Andrew: [ˌɛnɪˈwɔ̃n] /ˌɛwnɪˈwɔn+/ "only one."
 Peter: [ˈɤ̃ʔtˢɛiˈdɑmʔˢ] /+ˈɛwtɪˈdɑmp-/
 "Humpty Dumpty (sic)"
 Lynn: [ˈɤ̃²pˢˈlɛɐ̃] /ˈup(ɛp?)ˈlɛː+/ "up there."

ii /e/

As at older ages, /e/ occurs widely in stressed syllables within the utterance:

Lynn: [ˈdɛzənɛɪ] /ˈdɛzənɪj+/ "doesn't he?"
 Tracy: [ˈɛnɛɪ] /ˈɛnɪj+/ "ain't he?"
 Fern: [ˈkˢɛn̄æʋ] /ˈkɛnɑjæʋ/ "Can I have...?"
 Lynn: [ˌɤnɛːˈgˢɪnɛɪˌpˢɪgz] /+ˌɛnnɛˈɡɪnɪjˌpɪgz+/
 "And the guinea pigs."
 Steven: [ˈfændɪʔ,ɛ.ɤˌlaɪs] /ˈfændɪt,ɛt,laɪs/
 "found it at last"

A striking difference from 9-year old speech, however, is the frequency with which utterance-final syllables containing this vowel have secondary or primary stress. Allophones of /e/ in these syllables are sometimes exaggeratedly open and fronted, or lengthened:

Steven: [ˈmɪstɛˈbɛɪ,kˢɛ.n] /ˈmɪstɛˈbɪj,kɛn+/
 "Mister Beaken!"
 David: [ˈwɔ̃ʔˢ,ɛː] /ˈwɔwt,ɛ+/ "water."
 Trevor: [ˈtˢɑɪgˢgɛːtˢ] /ˈtɑjgˢgɛ+/ "Tiger!"

Trevor: [ɪnə'wɔ:2,t'æ] /ɪnə'wawt,tə+/ "in the water."

Peter: [ɪ'æ:lən] /+ɪ'æ:lən+/ "Alan."

Paula: [ɪ'pɔ:lə] /ɪ'pɔw,lə+/ "Paula."

Within the utterance in unstressed syllables this weak vowel is often replaced by a centralized allophone of /ɪ/ by many speakers:

Paula: [ɪnə'spaɪdə] /+ɪnə'spaɪdə/ "and a spider..."

Steven: [ɪ'dætəɪnɪn'ɪm] /ɪ'dætəɪnɪn'ɪm/ "That ain't an' him,"

Fern: [lɛt'mɪj'æ-ɪ'gæj+/

"Let me have a go(sic)?"

Other short vowels may function occasionally as weak forms, including /e/, /o/, /u/ (See V, 3.1v1).

/e:/

Most of the Nursery children are able to produce this phoneme in a relatively mature form as in the 9-year old model -

[e:], [é:], [œ:] -

Fern: [ɪ'fœ:n] /ɪ'fœ:n+/ "Fern."

Lynn: [ɪ'hé:ɪm,sɛɪf] /ɪ'hæ:ɪm,self+/ "hurt himself."

Mark: [ɪ'p'œ:fjəʊm] /ɪ'pœ:fjuwm/ "perfume"

Closer and more open variants are relatively rare:

Lynn: [ɪ'pœ:f,jəm] /ɪ'pœ:f,jəm/ "perfume"

Trevor: [ɪ'wœ:ksɪn'nəʊms] /ɪ'wœ:ksɪn'nəʊs/ "works in (the) house"

Except in the case of Mark, who frequently replaces mature /
 /e:/ with a backopen unrounded vocoid similar to /a:/,
 there is no consistent pattern of substitution for this
 vowel among Nursery children. It is interesting to see that
 in an example given above Mark has produced a 'normal' allo-
 phone of /e:/, though elsewhere he replaces it with /a:/.
 It can be suggested that forms with /a:/ are for this speak-
 er 'archaisms' surviving from an earlier phonological state.
 A form such as /'pə:,fjuwm/ is a 'fore-runner' word,
 initiating a change in the vowel system that will become
 general at a later stage:

Mark: [tʃsü.²tə] /'tra:tʃ/ "Church"

" : [lɛvɔde,dəʃt] /'lɛwde,də:t/ "load of dirt"

The word "bird", presumably one that most children learn at
 an early age, has a variety of realizations:

Lynn: [dɪk^oəɪ,bɛdz] /'dɪkɪj,badz/ "Dicky birds"

Tracy: [wampɔd^z] /'wampə:d-/ "One bird"

" : [ə'bærbɪɪ'bɔd^z] /ə'bæjbɪj'bod-/ "a baby bird"

v /əw/

The starting-point of this glide shows considerable variation
 at this age. From the position that it normally has in older
 speech - [ə] - it may fluctuate to positions that are more

front and perhaps closer - [ɛ̃], [æ̃] -, more central - [ɜ̃], [ə̃]
 or retracted - [ɛ̠], [ɜ̠] - open and fronted [a], central [A]
 and retracted [Å]:

- Lynn: [ˈnæ̃ʊβ̃ɹ̃²t̃³] /ˈnə̃wɔt-/ "Know what...?"
 Trevor: [ˈʔɛ̃ʊ, ʒɛ̃ɪ] /+ˈə̃w, zɪj+/ "Horsey."
 Debby: [ˈfɹ̃əʊˈstə̃ʊns] /ˈfrə̃wˈstə̃ʊns/ "throw stones"
 David: [ˈlɛ̃ʔdʒəˈfɪj] /ˈlə̃wɹ̃dʒəˈfɪj/ "loads of fish"
 Andrew: [ˈä̃gə̃ɪnˈbɛ̃ʔ²ɹ̃] /ˈä̃j̃sɪj̃nˈbə̃wts/ "I seen boats"
 Debby: [t̃°ə̃, gə̃ʊˈə̃ʊm] /t̃ə̃, gə̃wˈə̃wɪ+/ "to go home."
 Andrew: [ˈb̃Ä̃ʊ²ɹ̃:] /ˈbə̃wts/ "boats"

Many of these variants can be found at different times in the idiolect of any one speaker, though there are certain children who consistently use one realization more than others. Andrew, for instance, commonly has a starting-point that is back of central and somewhat lower than half-open. This is the region in which mature /aw/ has its starting-point, so that Andrew would probably be unable to realized the opposition of /əw/ and /aw/. David, on the other hand, commonly has a relatively fronted starting-point - [ɛ̃];

- Andrew: [ˈlʊk̃ˣəˈlɛ̃m, b̃ʔ̃ʊ²ɹ̃s] /ˈlʊk̃əˈlɛ̃m, bə̃wts/
 "Look at them boats"
 " : [ˈsmæ̃ʃp̃h̃əˈd̃æ̃ɹ̃², ʔ̃ʊ²ɹ̃] /ˈsmæ̃ʃ-p̃əˈt̃æ̃j̃t̃, ə̃wɪ+/
 "Smashed potatoes,"

David: [ʰfəi,bʰʌʔs] /'friː,bəʊts+/ "three boats."
 " : [ʰnʌʊiʔ'æɪnʔ] /'nəʊi't'æɪnt/ "No it ain't"

As at older ages the glide may be reduced, and monophthongs may result, in situations such as before a vowel or in an unstressed syllable:

Denise: [ʰgʷɪnt'ə'wɒlədæɪ] /'gəʊwɪnt'ə'wɒlədæɪ+/ "going to holiday."

Fern: [ʰdʒːz,pʰɛnʔ,sɔːz] /'dʒəʊz,pɪnt,səʊz+/ "those pencils."

Andrew: [ˌnə'ðnəʊvə] /nəʊ'aɪnəvə/ "No, I never"

Lynn: [ˌdɔːnʔ'nəʊ] /ˌdəʊnt'nəʊ+/ "Don't know."

However in a slow deliberate style of speech glides may be produced that are longer and more extensively glided than in older forms of speech:

Lynn: [ʰaɪdʌʊnʔ'nəʊ] /'aɪdəʊnt'nəʊ+/ "I don't know,"

Tracy: [ɪnə'bəʊʔ] /ɪnə'bəʊt+/ "In a boat."

Fern: [ʰdʒɛskʰaɪnd] /'dʒəʊs-kəɪnd/ "those kind..."

Mark: [ʰʔəːʊ'liʔ,wʰɪ] /+ʰəʊ'lɪt,wəʊ,wəʊt+/

To younger speakers it seems that rounding may be an important perceptual cue to this phoneme. There are probably more rounded glides at this age than at older ones, especially where the phoneme is fully and carefully articulated. In one case it is realized as a back half-close monophthong which, though rounded, is not as rounded as monophthongal allophones

of /ow/ in the same region:

Steven: ['bɔ̃ən'æɹɐv] /'bəwən'æɹəw+/ "bow and arrow."

In speakers whose phonological system is relatively unstable this phoneme is found in some words substituting for other vowels which are characterized by glides to back half-close or close - /ow/ and /uw/, and in one instance /æ:/:

Trevor: ['ʔɐv, zɛɪ] /+ 'əw, zɪj+/ "Horsey."

Mark: ['ʔɐv, sɛɪ] /+ 'əw, sɛj+/ "horsey."

Trevor: [Am'dɛvənɪ] /,ɑjm'dəwənɪ+/ "I'm doing it."

Mark: ['wɛɪdɑv] /'wɪjdəw+/ "...we do."

Trevor: ['wɔ̃:ʔksɪŋ'nɛvms] /'wɛ:ksɪn'news/
"works in (the) house"

One girl only produces the glides to front close noted as characteristic of female speech at 9 years - [ə̃], [ɛ̃] - though it occurs in her speech in only a few places:

Fern: [ə'ʔɐvst] /ə'gəwst/ "a ghost"
['ɹɪ, dɛvz 'bɔvz] /'ow, dəwz-'bowz+/
"all those balls"

Rounding of front vocoids is a feature which is relatively late in being mastered by children (Jakobson 1968, cf. II 4.2i), and if this rounding is not incorporated into a glide to front close then a segment sounding something like /æj/ will result. This may be what has happened in such utterances as:

Fern: [lɛʔ'meɪs̃^uɪ'gɛɪ] /lɛp'mɪjə-i'gæj+/ "Let me have a go."
 Mark: [ʔə'lɛɪɪɔ̃] /+ə'læj+/ "Hallo."

This may also be part of the explanation of the peculiar demonstrative form /'dæjz/ mentioned in 3.2x above, since it is only the rounding in the second part of the glide that distinguishes [ɐ̃] from a somewhat central-starting /æj/.

xvi /aw/

The fact that /əw/ has such a variety of starting-points at this age means that the contrast /əw/ - /aw/ cannot be completely clear for all speakers. There is always the possibility that what appears to be /aw/, in a word that takes this phoneme in the model language, may turn out to be an allophone of /əw/. The vocoid in Lynn's [ɪ'hɔ̃ud] is the same as that in Andrew's [ɪ'bɔ̃uɔ̃], yet in terms of the terminal model these should be two different items, /aw/ and /əw/. /ow/ also has relatively open variants, so that although Trevor appears to have mature usage of a phoneme /aw/ in: [ɪ'k^xɔ̃dɪ'ɪɔ̃²ɛɔ̃] - "Goldilocks", yet when we see a very similar vocoid in:

[ɪ'lɛʔ'meɪ't^sɪrk^xɪn,ɪɔ̃] /ɪ'lɛtmɪj'taw(ow)kɪn,ɪt/

"Let me talk in it"

it appears that the /aw/ - /ow/ contrast is not properly established for this speaker. In comparison with /ow/ and /əw/

this phoneme has a limited distribution and functional load, and it is to be expected that it should be acquired at a late stage of phonological development by the young speaker. It would seem that /aw/ is perceptually nearer to /əw/ than to /ow/. Where /aw/ is replaced by another vowel it is /əw/:

Tracy: [ɛ'sɛʊdʒə'leɪ] /ɪ'səʊdʒə'leɪ/ "a soldier there"

r11 /aj/

The varieties of starting-point for the glided allophones of /aj/ are probably as numerous at this age as at older ages. They range from fully back open to front of central open, sometimes to almost fully front open: the centre of distribution tends to be more central and fronted at this age than it is with older children:

Denise: [gə'baɪ.ɪ] /gə'baɪ+/ "Goodbye."
Steven: [ˈaɪfˌraɪtənd] /ˈaɪfˌfraɪtənd+/ "half frightened"
Debby: [waɪtʰ] /ˈwaɪt+/ "Right!"
Fern: [ɪˈlaɪtʰə] /ajˈlaɪtə/ "I like to"
Lynn: [ˌmɑɪˈhəʊm] /ˌmajˈəʊm/ "my home"

As with older children monophthongs are found in both stressed and unstressed syllables, and "I", "I'm", "my", very often have an unglided vocoid, whether stressed or not:

Fern: [ˌdæzənˈlaɪkʰɪm] /ˌdæzəntˈlaɪk-hɪm/
"doesn't like him"

Debby: [ˈlɪd̥.tʰɪnəˈfæ] /ˈlaɪtɪnəˈfaɪə/ "lighting a fire"

Lynn: [ˈɪʌm.nəˈhæːˈvæɪd̥] /+ˈaɪm.nɒtˈhæːˈræɪʒ +/
 "I'm not her age."

Paula: [ˈpɑːnæɪmˈfɔːlə] /+aɪnæɪmˈspɔːlə +/
 "My name's Paula."

David: [ˈdɪdəʊlaɪˈmɪk̥] /aɪˈduwlaɪpˈmɪlk +/
 "I do like milk."

However, the glided vocoid in "I", "my" and so on is much more common at this stage than among 9-year olds. If the monophthongal allophone of /aɪ/ is symbolized as [ɪ̯] and the glide as [aɪ], it is found that for "I" there are 33 occurrences of [ɪ̯] in the Nursery group, to 19 occurrences of [aɪ], whereas in the 9-year old group to 24 occurrences of [ɪ̯] there were only 5 instances of [aɪ]. (this count covered only stressed /aɪ/). Now taking both stressed and unstressed occurrences of "my" the figures are more telling. [maɪ] appears 15 times in the Nursery sample of speech, and [mɪ̯.] only 8 times, while at the 9-year old level there are only 5 instances of [maɪ] to 31 recorded cases of [mɪ̯.]. Equally significant is the increase in the use of the weak forms /mi/ and /mɪj/ for "my". Only 4 occurrences of these forms are found at the Nursery stage, compared to 16 instances at the 9-year level. These figures are set out in full in Chapter V, 3.3.111.

Sequences of /aj/ + /ə/ may be treated as disyllables, or may be coalesced to /a:/ or /aj/ as at older ages:

Tracy: ['big^h'laɪən,ɪnɪ'sa:k^hew] /'big'laɪən,ɪnɪ'sa:kew+/ "big lion in the circus."

Trevor: ['laɪ,ɪns] /'laɪ,ɪns/ "lions"

Tracy: ['laɪn] /'laɪn/ "lion"

Paula: ['Aɪdə't^hɛnt] /'aɪdə'tent/ "I had a tent."

Mark produces an unusual disyllable at one point:

['fɥ5nəʊdɪ:'flaɪn] /'fwonsa:'flaɪn/ "swans are flying"

This can be compared with other two-directional glides in /aj/ that the same speaker and his sister Tracy produce; they are to be interpreted as allophones of the single phoneme /aj/:

Tracy: ['wɪn2ə't^saʊəm] /'rɪntə'taɪm+/ "winter time"

Mark: ['nəʊæɪn'aʊɪ] /'nəʊæɪn'aɪ+/ "No ain't I."
(= No I ain't.)

Tracy: ['gəʊɪ] /'gəɪ+/ "guy."

ii /aɪ/

As with /aj/ young children's realization of this vowel tends to be generally more fronted than in older speech, although even fully back vocoids are not infrequent:

Lynn: [k^hʌn2'θmɛl] /,kaɪnt'smel/ "can't smell"

Andrew: [ˈmæʊ2ə,kʰä:ð] /ˈmæwtə,kɑ:z+/ "motor cars."

Fern: [ɪɪˈkʰg:n2ˈkʰɛtə,ɪ.2ʰ] /ɪjˈka:ntˈketʃ,ɪt+/
 "He can't catch it."

If these fronted variants are shortened there will be a risk of confusion with /a/ and even /æ/; these phonemes do indeed replace /ɑ:/ in some places. A similar thing is of course possible with fronted allophones of /aj/ when they are weakened:

Lynn: [ˈAɪkʰän2ˈakʰan2] /ˈajkantʰˈajka:nt/
 "I can't... I can't"

Mark: [ˌhɔkɪˈædɪ] /+ˌhokənˈæd(j)ɪ /
 "I can hardly..."

Trevor: [ˈAɪ,gɔ2ˈtʰu] /ˈaɪ,gotˈtuw/ "I've got two..."
 /ɑ:/ is near in quality to /o:/ at this age, and confusion of the two vowels may result from the rounding of one or the unrounding of the other:

Fern: [ˈwəm,mɛ:ˈlɪsən] /ˈwəm,mɑ:-ˈlɪsən/
 "one more listen"

six /a:ɪl/

The vocoid glide associated with this sequence before /+/, /-/
 and consonants is found only twice in the recorded speech of the Nursery children, where it appears to be a form that has been learnt in a ritualistic expression from the nursery story

Debby: [,aɪ'pʰafənɔ̃'pʰafənɔ̃q'bləʊ] / ,aɪ'pafənəɪ'pafənə:l'bləʊ ,
 "I puff and I puff and I'll blow..."

Steven: [dʒə'haɪfənə'pʰas] /ɑ:l'haɪf-ənəj'pas-/
"I'll huff, and I puff,"

['wäɪjə 'ðɛ] / 'wäɪjə 'ðeː / "While you're there. "

This vowel does not show any very significant differences from 9-year old patterns in Nursery speech. Rounded and unrounded vocoids occur in approximately the same proportions as at the older age - 24 cases of [ʌ] and 37 of [ɔ] in the Nursery group, to 23 [ʌ] and 48 [ɔ] in the 9-year old sample. A slight proportional increase in unrounded allophones is probably due to idiolectal characteristics of certain Nursery informants rather than to differences in age. Due to the

comparative instability of vowel articulations among this group there are rather more open variants of /o/ at this age:

Lynn: [p^hɪp^hoɔgɔʔə'k^hɪf] /pɪjpɔwɔtə'kof+/
 "people (who) got a cough."

Debby: [nɪʔdɔʔgs] /'not'dogs+/"Not dogs."

Fern: [ə'ʃəʊgɔ'ɪmɪn] /ə'juwɔp'majn+/"Have you got mine?"

" : [t^sə.ɪ:ʔ'ɪf] /tə:nnat'of+/"turn that off."

Peter: [dɔʔɪv'feɪʔ] /'dotiv'fɪʔ/ "got his feet.."

As at older ages, certain common words may have alternative forms with /u/:

Andrew: [wulə'bə:ʔ'meɪ] /'wulebə:p'mɪʃ+/
 "What about me?"

David: [nʊʔ'jeʔʔ] /'nut'jet+/"not yet."

Denise: [ʔɪ:çgɔʔ'dzɑ:məs] /+ɪjsgut'dra:məs/
 "He's got (py)jamas"

Equally, words which normally have /u/ may be found at this age with forms in /o/. These are mainly "look" and words that rhyme with it - "book", "Cook".

Denise: [lɔ.ʔ'əɪɪnʔ] /lok'ʃɪjəjnt/ "Look, she ain't..."

Fern: [lɪ.ʔk^x] /'lok+/"Look,"

Lynn I [tɹæɪsɪ'k^xəʔk^x] /'træjsɪ'kok+/
 "(Lynn) Tracy Cook."

Lynn: [bɔʔks] /'boks+/"books."

A more deliberate style of speech and a slower rate of delivery at this age mean that there is less contrast between stressed and unstressed syllables. The weak vowel /ə/ has a lighter functional load for Nursery children (see V,3.1v₁) and one speaker, Mark, substitutes /o/ for /ə/ in both stressed and unstressed syllables:

[¹ mædɪsən ¹ væni ²]	/ ¹ medison ¹ rænit+/	"Medicine, ain't it?"
[¹ ʔælɛɪ ¹ fɔn ²]	/ ¹ ælæj ¹ font+/	"elephant."
[¹ mæ ^ə nɜː ¹ dɪd ^ə n ²]	/ ¹ mænz ¹ didont+/	"Mans didn't."

xi /o: /

Realizations of this vowel may be more open at the Nursery level than in the terminal model, or may be glides to a more open final point. Unrounded and almost open back vocoids are interpreted as /ɑ:/:

Fern:	[¹ dʌɪnə ¹ gɔː]	/ ¹ dajne ¹ soː+/	"dinosaur."
Paula:	[¹ lɛf ^ə də ¹ dɔːrə ^ə p ^h ən]	/ ¹ lefde ¹ dɔːrəwpen/	"left the door open."
Trevor:	[ə ¹ gæɪ ¹ gɔː]	/ə ¹ sɪj ¹ soː+/	"a see saw."
Lynn:	[¹ zɪ ² ʃɔː ¹ vəʊn]	/ ¹ zitʃoː ¹ rəʊn+/	"Is it your own?"
Fern:	[¹ də ¹ ɪnə ¹ səː]	/ ¹ dajne ¹ saː/	"Dinosaur"
Trevor:	[æv ¹ fʊ ¹ dɪnə]	/ ¹ æv ¹ faː ¹ dɪnə+/	"have for dinner."

As was found with /i:/ and /e:/, the feature of length that distinguishes this vowel from its corresponding short vowel

/o/ is not always maintained. Among the younger children of this group this may be due to the relatively late acquisition of this phoneme. ~~With~~ an older speaker such as Steven short vocoids may be found in positions - such as utterance-final open syllables - where /o/ may not occur, and are thus to be regarded as /o:/, as in the 9-year old system:

Debby: [wɪ'fʃqhæʊs] /wɪ'fʃohæ:s/ "with your house"
 " : [ðɪs'stɔɪ] /ðɪs'storɪj/ "this story"
 Mark: [dän'fɔvɪ?] /dan'forɪt/ "done for it."
 David: [dæ2'lɔ.vɪ] /dæt'lo:ri:j/ "that lorry"

However the proportion of short vocoids to long and glided vocoids at this age - 5 and 12 occurrences respectively - is not significantly different from the proportion at the older age - 7 short to 21 long and glided.

ii /oj/

This vowel generally behaves as in the 9-year old system, though some more open and unrounded allophones may cause overlapping with /aj/. The differentiation of /oj/ and /aj/ may be accomplished relatively late in life, owing to the comparative rarity of the phoneme /oj/. The confusion of the two items was found only in the speech of boys in this sample:

Trevor: ['bɪg'bɔɪz,bʊ?kɔ] /'bɪg'bajz,buks+/
 "big boys' books."

Peter: [ʼtsǎ·ɪz] /ʼtaɪz+/ "toys."

David: [ðeʼtʰarɪz,bɛs] /ðeʼtaɪz,bɛs+/ "...the toys best."

Two-directional or even three-directional glides are found at this age:

Kay: [ä,lai²kʼt^sɔʷɪz] /aɪ,lai²kʼtoɪz+/

"I like toys."

Mark: [eʼt^sɔʷɪɪdʌg] /eʼtoɪdog+/ "a toy dog."

iii /u/

A feature of this vowel at the Nursery level is its alternation with /o/ in certain words, mainly in "look" and words rhyming with it (see 3.2xx above) but also in:

Fernse: [ʼgɔbʼbAɪ] /ʼgɔbʼbaɪ+/ "Goodbye."

Trevor: [ʼpʰɪ²tʼɪ²ʰXɛn] /ʼpɒtɪtʼɪɒn+/ "put it on."

"Look" also has forms with /i/ and /e/:

Andrew: [ʼlɪgɛðe] /ʼlɪgəðe/ "Look at the..."

Debby: [ʼɪɪɪʼä.ʼlɛɪkʰ] /+,ɪɪʼa:ʼlək+/ "Here (you) are, look!"

/u/ appears in many unstressed syllables where older speech would use /e/:

Andrew: [ɪʷʼweɪgəʷneʼsɪɪ] /+uʼwiɪgəʷneʼsɪt+/

"Where we going to sit?"

Peter: [ʼwɔɪləbæɪuʼwɪɪɔ] /ʼwɒləbætuʼwɪɪs+/

"What about the wheels?"

Margaret: ['wɔʃjü'veə.ndz] /'wɔʃju'rændz+/ "Wash your hands."

xiv /uw/

The allophone that was found most commonly in 9-year old speech, a glide from central to close back of central - [eũ] or [eə] - is also widely used in Nursery speech. The phoneme shows two important differences, however, from the older model in its allophones at this age.

a) Prominent Allophone

It was found in connection with the terminal vowel system that /uw/ in prominent positions had an allophone that took the form of a glide from a more open and fronted position than usual - [eũ], [eə], [ey]. This kind of glide is found quite frequently for /uw/ in Nursery speech in positions which need not necessarily be fully prominent:

David: ['2eũ.β'bevid] /+'uuv'berid+/ "Who'se buried?"

Mark: ['tʰeũ't'hɛk'ɪz] /'tuw'tekiz/ "two teddies"

Andrew: ['ā'dəũ] /'aj'duw+/ "I do,"

Fern: [gɔʔə'blæɪ.n] /gote'bluwn+/ "got a balloon."

The prevalence of this type of allophone among young children could be said to be due to the part played by differential stress in language-learning. Those forms which are given most prominence in an utterance by a mature speaker will clearly be relatively easy for the child to hear, perceive and event-

ually learn to use actively. Within the Cockney vowel system however the use of a vocoid glide with such a fronted and open starting-point endangers the distinction of /uw/ and /ew/. Confusion of these two vowels is found in the younger speakers in the Nursery group:

Trevor: [,Am'dəʊənɪ] / ,əjm'dəʊənɪ+ / "I'm doing it."

Mark: [ɛ'dAu] / əj'dəʊ+ / ... "I do"

b) Fully Back Rounded Allophone

Both monophthongs and glides to back in /uw/ may be found at this age at or moving towards an almost fully close and back position, sometimes with pronounced lip-rounding. This is a type of allophone that would not be heard from older speakers, and one which occurs often enough to suggest that it is not the result merely of accidental variation in the phoneme. It seems to suggest that within the vowel system /uw/ is strongly associated for these children with the features of a back, close rounded vowel, and that these features are reproduced in the articulation of the phoneme to preserve an effective contrast with other members of the vowel system:

Paula: [ɔfə'jē.ū] w/ɔfə'juw+ / "off of you."

Denise: [ɔfə'jɛ.u] /ɔfə'juw+ / "off of you."

Margaret: ['bləʊn] / 'bluwn+ / "balloon."

Margaret: [nə'meɪ.n, kʰamz, dæən] /nə'muwn, kamz, dæ:n+/
 "and the Moon comes down."

Peter: [,tʰuːdə'seɪ] /,tuwde'diɟ+/"to the sea."

Tracy: [m̥mo.n] /muw(ow)n+/"moon."

" :z ['ɪnə'zəɪ] /'ɪne'zuw+/"in the Zoo."

In positions that are not stressed and not utterance-final /uw/ may be weakened to /u/. One speaker seems to have deduced from this that syllables with /u/ may take /uw/ in strongly stressed positions:

Andrew: ['bʊɹʊn'θəfɪs] /'brɛwn'suwgə+/"brown sugar."

xv /ow/

With /ow/, as with /ɪɟ/ and /uw/, the prominent form of the vowel is found in all positions among Nursery speakers.

The prominent allophone of /ow/ is a glide from half-open to half-close which remains relatively retracted throughout - [ɔo]. At this age more open starting-points occur occasionally, the result probably of accidental variations in articulation:

Fern: ['lɔʔgə'boɔg] /'lotse'bɔws+/"lots of balls."

" : ['e'beɪʔɔ, bɔɔɪʔ] /e'biɟɪ, bowɪt/

"a beach ball it..."

Paula: [ˈwɔɔɔ, ɛ̃.] /ˈwɔwt, ɛ+/ "water."
 Steven: [ˈnɔɔɔɔ ˈhɔɔɔs] /ˈnɔtɛ ˈhɔws-/ "Not a horse,..."
 Mark: [ɛθ ˈmɔɔɔnɪn] /ɛs ˈmɔwnɪn/ "this morning"

The greater frequency of these open-starting glides for /ow/ may be due to the presence of retracted and close variants of /uw/ in Nursery speech, as well as to the effect of differential stress. The less prominent allophones of /ow/, including glides from more central position to back half-close, and monophthongs at back half-close, are also found in Nursery speech:

Andrew: [ˈβɪŋkʰɪɔɔɔ ˈlɔɔɔ ˈlɔɔɔpʰ] /ˈwɪŋkitow ˈlɔp+/
 "drink it all up."
 Peter [ˈsɛɔɔɔnɛ ˈwɔɔɔ] /ˈsɛtɔnɛ ˈwɔw+/ "sat on a wall."
 Paula: [ˈpɔɔɔɔɔ, ɛ̃] /ˈpɔw, ɛ+/ "Paula."

For Mark there is a persistent confusion of this vowel with /ew/, although as can be seen in an example of his speech above he has the phoneme /ow/ in his phonemic system:

[ˈblɛɔɔɔsɔws] /ˈbluwsews+/ "blue sauce."
 [ˈɔw, sɛɔɔɔ] /+ˈɛw, sɛɔɔɔ+/ "Horsey."
 [ˈlɪɔɔɔ ˈɛw, sɛɔɔɔ] /ˈlɪtu ˈɛw, sɛɔɔɔ/ "little horsey."
 [ˈlɪɔɔɔ, ɛ̃, wɔɔɔɔ] /ˈlɪt, ɛw, wɔɔɔɔ+/ "little one."
 [ɛ̃ ˈmɔɔɔnɪn] /ɛ̃ ˈsmɔwnɪn/ "this morning"

4. Consonants

4.1 Plosives

Plosive articulations are acquired at an early age by children in first-language learning, and appear to be well established in the speech of all the children in the Nursery group, with one or two exceptions who have difficulty with velars. The bilabials /p/, /b/ cause no difficulty for any speaker at this age, and it is not proposed to dwell on them. The alveolars and velar plosives do show certain characteristics from older phonological models.

1 /t/ and /d/

There is no child without oppositions involving /t/ and /d/, but the characteristic allophones of these phonemes at this age differ in some respects from the 9-year old norms. Dentalized variants - [t̪], [d̪] - are frequent:

Fern: [ˈgɔt̪əˈd̪aɪnə, sɔː+] /ˈgɔtəˈdaɪnə, sɔː+/
"got a dinosaur."

Steven: [ðɛz̪ˈt̪uwbə, lʊns] /ðɛzˈtuwbə, lʊns+/
"There's two balloons."

Lynn: [ˈmɛst̪əd̪] /ˈmɛstəd+/"mustard"

Margaret: [ˈspɑɪ, d̪ə] /ˈspɑɪ, də+/"spider."

Mark: [ˈbɪk˘ˈbæd̪˘ˈwɔf] /ˈbɪgˈbædˈwɔf+/"big bad wolf"

Palatalized allophones are also common - [tʲ], [dʲ]:

Mark: [ˈaɪædʲəbɪgˈlɒvəl] /ˈaɪædʲəbɪgˈlɒrɪj/

"I had a big lorry"

Trevor: [ˌfʊ.ˈdɪnə] /ˌfaːˈdɪnə+/ "for dinner."

Margaret: [ˈlɛʷdʲz əˈbɒɹs] /ˈlɛwɹzəˈbɒws+/ "loads of balls."

" : [ˈtʲɛwˈlɪɹˈdɪkɪbəd] /ˈtuwˈlɪlˈdɪkɪbəd/

"Two little dicky bird(s)"

Retroflex articulations are not so common among Nursery children, but are exclusive to this age as allophones of single plosive items:

Peter: [ˈbæʃɪɹˈmɛʊtʲə] /ˈbæʃɪɹˈmɛwte/ "bashed his motor"

David: [dʲəʊˈeɪɹɪ] /duwˈɪɹtɪt+/ "Do (he) eat it?"

/t/ may have a characteristic alveolo-palatal release at this age - [tʰ]

Debby: [ˈdɪɹwɛˈnˈtʰəʊ] /ˈðɪswanˈtuw+/ "this one too."

Peter: [ˈtʰəʊtʲˈseɪ] /ˈtuwteˈsɪj+/ "to the sea."

Both /t/ and /d/ may have a lateral release, producing some lateral affrication. Again, this does not occur frequently, but is found only among this group of speakers:

Andrew: [ˈhæɹˈtʰ] /ˈhæt+/ "hat."

Tracy: [ˈædɪdʲɪˈdɒɹ] /ˈædɪdɪˈdɒg-/ "How did the dog..."

Given the relatively slow tempo of Nursery speech, it is perhaps surprising to find that the flapped medial allophone of /t/ - [ɾ] - seems to occur as often among these children

as at older ages, even though in 9-year old speech it is a product of rapid speech. Whereas in the mature model this flap was found only in the speech of boys, in Nursery speech it occurs equally among boys and girls:

Lynn: [p^hʊɹɪʔənʃə] /'putɪt'ɒnʃə/ "put it on you"

Paula: [ʔiz'gɔɹɪʔ] /+ɪz'gɒtɪt/ "He's got it"

Andrew: [p^hə'dæɪʔ,ʒʊʒ] /pə'tæɪt,əws+/ "potatoes."

[ɹ] occurs not only for medial /t/ but also for /d/:

Andrew: [mɹ'dæɪɹ] /maɹ'dæɪ/ "My Daddy"

Fern: [ɪʔ,k^hʊɹənʔ] /ɪk,kʊɹənt/ "It couldn't"

The dentalized segment [ɹ] occurs at this age, as at older ages, in grammatical items such as "the", "that", "this".

Where a 9-year old speaker uses a dentalized segment in such a word it has been interpreted as an occurrence of /ð/, but since at this age dentalization is so common a feature of all the phonemes classified as 'alveolar' it cannot be allowed that there is any contrast between [d] and [ɹ]:

Fern: ['bæɹɪɹ,ɹɹm] /'bæɪɪ,dem+/ "busted them."

David: [ɹ,ɹæʔs't^sɔʔpsɹɪ] /,dæts'tɒpsɪj+/

"That's Topsy"

Trevor: ['dɹɹzɹɹ'bɪg'bɹɹz] /'dæwzɹɹ'bɪg'bajz/

"those the big boys"

Fern: ['ʒ.nə,ɹɹʔ] /'aɹnə,ɹɹt+/ "I know that."

Peter: [ɹ,ɹ^ʔæɹ'bləʊ] /,dæs'bluɹ / "That's blue"

1 /k/ and /g/

Palatal allophones of /k/ and /g/ are characteristic of younger speakers:

Trevor: [ˈmæpɪcɪz] /ˈmæŋkɪz+/ "monkeys."

Janis: [ˈlɛ2mɛɪ, camˈɪ.] /ˈlɪpmɪj, kamˈɪn+/
"let me come in."

David: [ˈeɪɪɪɪˈcwɪˈ2cɪ] /ˈɪjɪkˈkwɪk+/
"eat it quick."

Andrew: [ˈmɪdæjˈɹʊstəˈwɛːˈ2kʰ] /ˈmɪjdægˈgɛwstəˈwɛːk+/
"My Dad goes to work."

Fern: [dɛzəˈɹɛyɡɪ] /dɛzəˈgɛwst/ "there's a ghost"

For one speaker, Andrew, inter-vocalic /k/ tends to lose some of its fortis features, and may be replaced by /g/, particularly in well-used expressions such as "Look at..."

[ˈlʊkˈɛɪɪˈðɛɪ] /ˈlʊkɛɪɪˈðɛɪ/ "Look at it there"

[ˈlɪgɛdɛˈlɪɪˈ2oˈkʰɪA] /ˈlɪgɛdɛˈlɪɪˈ2oˈkʰɪA+/
"Look at the little car."

[ˈlʊgɛlæɪˈhæɪˈ2tʰ] /ˈlʊgɛlæɪˈhæɪ+/ "Look at that hat."

Peter has difficulty in producing the velar phonemes. These he usually replaces with /t/ or /d/:

[dˈɛɪɪnˈbɪdˈɛ] /ˈdɛɪɪnˈbɪdɛ/ "getting bigger"

[ˈɪdɪɪˈbɪbɪwɪn] /ˈɪdɪɪˈbɪbɪwɪn/ "I got a big one"

[ɛɪˈtʰaɪnɪ] /ɪjˈtaɪnt/ "He can't..."

[ɪz

[ɪz'dʒʌv'feɪtʰəʔ'ɔm] /ɪz'dotɪv'fɪjtʰat'ɒf+/
 "He's got his feet cut off."

or he avoids the difficulty by omitting the velar:

[ɪ'ʔɛɪn'brɪð] /+ɪ'etɪn'brɪð/ "getting bigger"
 [ɪɪʔə'brɪ:fæɪ'ɪ'dam] /ɪjotə'brɪ:fæɪj'dam+/
 "He got a big fatty tum (?)."

In final position, where /k/ may be realized as the glottal stop, this incapacity is less noticeable:

[ɪ'sɪʔsən'ä.f] /ɪ'sɪt(ə)sən'a:f/ "six and a half"
 [ɪ'ʒɪnʔi'wɔ] /ɪ'ʒɪntɪn'wɔw/ "drinking water"

On occasions, however, he is able to produce velars, though it is only after some effort:

[ɪ'brɪ'brɪd'brɪg'brɪg'fæɪd] /ɪ'brɪ'brɪd'brɪg-ɪ'brɪg-ɪ'fæɪd+/
 "Big.... fathead."
 [nɛɪ'gɔʔbrɪd'ɪɛgz] /nɪj'gɔpbrɪd'ɪɛgz+/
 "(Hasn't) he got big legs?"

Another speaker, Trevor, is normally capable of producing /k/ and /g/, but in a moment of over-excitement - when a picture of some bees had ^aalarming associations for him - he seems to have relapsed to an earlier phonological state, where velars are replaced, as in Peter's speech, by alveolars:

[ɪ'dɔvzdɪ'tɪlɪjɛ] /ɪ'dəvzdɪ'tɪlɪjɛ/ "Those they kill you"
 [ɪ'dʒās'tɪlɪjɛ] /ɪ'dʒas'tɪlɪjɛ+/ "just kill you."

4.2 Fricatives

/f/ and /v/

Oppositions involving the labio-dental fricative feature are well established at this age, though whether these children have the voiced-voiceless distinction in this pair as much under control as older children have is doubtful (cf. the results of the test in Chapter VI, 3.2). /v/ is often fully or partly devoiced:

- Tracy: [wɪf'dæg] /wɪf'dɒg+/ "with (a) dog."
Debby: [wɪ'fçəʊs] /wɪ'fjohæ:s/ "with your house"
David: [ˈɑːfə,wə] /ˈæfə,wan+/ "other one."
Mark: [ˈvɪnɪgəˈvænɪ?] /ˈvɪnɪgəˈrænɪt+/ "vinegar, ainit?"

There are, however, no instances of /f/ being voiced, as might have been expected.

/f/ may be articulated with some rounding and pouting of the lips - [f̞]:

- Lynn: [ˈmɑːfæɪvɪʃ?] /ˈmɑːfæɪvrɪt/ "my favourite..."
Peter: [ˈf̞ɪʃ] /ˈfɪʃ+/ "fish."
Tracy: [səmˈf̞ɪʃ] /səmˈfɪʃ+/ "some fish,"

and may occasionally have bilabial fricative allophones;

- Fern: [ˈtʃɛːnɪtˈɔːf] /ˈtɛːnɪtˈɔːf/ "turn that off."
Peter: [ɪvˈfɛɪtˈtʃʌtˈɔːf] /ɪvˈfɪjtˈtʃʌtˈɔːf/
"his feet cut off."

/v/ may be replaced by the continuant /w/:

Tracy: [k^hævəwæn] /'kærəwæn+/ "caravan."

Other varieties noted in this sample include an ejective /f/, with syllabic function, and a glottalized medial /v/:

David: [f^h'gɔʔ] /fə'got/ "forgot..."

Trevor: [ʔa²ɣinə'gei'gɔA] /ʔ'avinə'siʃ'so:+/
"Having a see-saw."

11 /θ/

In this sample this phoneme is not found at all in the speech of some children. Only Debby and Steven produced [θ], as an allophone of /θ/, more than once in these recordings. However, those children who did use this phoneme used it quite regularly, only in places governed by the older model, even in word-final position, where perceptual distinctions are hardest for young children to make (cf. II, 5.2 ii):

Debby: [ˈɛvriθɪŋk^hɪn'ɪɐ̯] /ˈɛvriθɪŋkɪn'i:+/
"everything in here."

Steven: [ˈnəθɪŋkt̪^hə'dəʊ] /ˈnəθɪŋktə'duw+/
"nothing to do."

" : [ˈæʔəvɪz'mæθfɔ] /ˈæʔəvɪz'mæθfo:+/
"out of his mouth for?"

Lynn: [sɛn'ɜzɪθ] /sɛn'ɜzɪθ+/ "St. Osyth('s)."

David: [ɪŋθə'θɪŋ] /ɪθə'θɪŋ+/ "in the thing."

Lynn frequently gives [θ] as an allophone of /s/, in contradiction to Ingram's (1968) finding that children who lisp are generally those who are unable to use the voiceless inter-dental fricative for /θ/ (p.5):

Lynn: [ˈθeɪwɔʔˈðæʔɪð] /ˈsiɟwɔtˈðætɪz/ "See what that is"

It may be that Lynn is in the process of acquiring this relatively infrequent phoneme, and that /sənˈəwziθ/ is a fore-runner word, introducing a distinction that the speaker has not hitherto observed. Elsewhere, Lynn substitutes /f/ for this phoneme, as do most Nursery children:

[ˈmæɪkˈɪnəˌnɜːfɪŋ] /ˈmæɪkɪnəˌnɜːfɪŋ+/
"making a new thing."

The double-articulation [fθ] is rare at this age: only one case occurs:

Fern: [ˈɪmːAˈmæfθ] /-ɪmɔɟˈmæ:θ+/"in my mouth."

iii Initial /ð/

Most of the children in this group produced one or another allophone found for /ð/ in the model language - [ð], [ð̥], [z̥], [d̥]. However only two speakers - Debby and Steven - could be said to be using the phoneme in a consistent and controlled way:

Debby: [blɛʊ'ðæsʔwan] /blɛw'ðætwan/ "blow that one!"
 " [ˈaʔpðə'lædɐ] /ˈapðə'lædɐ+/ "up the ladder."
 Steven: [ˈðæs'tɔ̃ʔpsɪɪ] /ˈðæs'topsɪj/ "That's Topsy"
 " : [ˈðɪs:ə'bæʔðə'dʒæɡən] /ˈðɪsə'bætðə'dræɡən+/

"This is about the dragon."

And even the speech of these two displays features typical of immature speech with respect to this phoneme. Perhaps the most striking difference from older usage for word-initial /ð/ at this age is the number of substitutions of /l/, not only the clear alveolar lateral continuant, but also a lateral fricative [ɬ], a lateral-released plosive [ɫ], and a palatal lateral [ʎ]:

Mark: [ˈwɔs'læʔ] /ˈwɔs'læt+/ "What's that?"
 Tracy: [ˈlæʔwänʔˈlæ̃ːɪnɔnˈlæʔwän] /ˈlætʰwansˈlæjɪnɔnˈlætʰwan+/

"That one's laying on that one."

Peter: [ˈlɛ:zɪz'dæ,dɔɪ] /ˈle:zɪz'dæ,dɪj+/

"There's his Daddy."

Steven: [fʊlɐ'bæd'wɔ:f] /fʊlɐ'bæd'wɔw/ "for the Bad Wolf"
 Tracy: [ˈdɔɡs'ɬɛʊ] /ˈdɔɡs'le:+/ "dog's there."
 " : [ˈʔɪdlæɪ'a:] /ˈɪlæj'a:+/ "Here they are."
 Trevor: [ˌgʌʔə'kʰAʔ,ʌɛn] /ˌɡɔtə'ka(?)t,ɪɛn+/

"(Who) got a cart (kite? cat?) then?"

Some speakers favour [d] or [ɫ] in place of /ð/. This does not of course exclude children who substitute /l/ in places:

Fern: ['dɤ:z, p^hen², ɣo:z] / 'dɔwz, pənt, sɔwz+ /

"... those pencils."

Denise: ['dɔʊz 'lɪ², ɔ- 'wɑŋg] / 'dɔwz 'lɪt, ɔw 'wɑnz+ /

"those little ones."

Steven: ['dæ²æɪnɪn 'ɪm] / 'dætæjɪnɪn 'ɪm+ / "That ain't an 'him',"

Peter: ['ɟmunɪn 'ɪdə 'sɔi] / 'ɟmunɪn 'ɪdə 'sɪj+ /

"Swimming in the sea."

As at the older age, /n/ may replace /ð/ in the vicinity of another nasal, and /nð/ is frequently reduced to the single phoneme /n/:

Steven: ['wɔŋ²nəbeɪləʊn] / 'wɔntnəbeɪləʊn+ /

"want the balloon."

Debby: [,fɔm²nə 'wɔf] / ,fɔmnə 'wɔf+ / "from the wolf."

Trevor: [ɪnə 'wɔt², t³ə] / ɪnə 'wɔt, tə+ / "in the water."

Lynn: [ɹə 'neɪlə 'sɔɪz] / +ə 'neɪlə 'sɔɪz+ / "and there(are)the sails."

Andrew has relatively consistent use of the voiced flap [ɾ] as an allophone of initial /ð/ :

[ɾæɪ 'kɹæʃ] / ɾæj 'kɹæʃ+ / "They crash."

['ɹɔvə 'dɛ:] / 'ɔvə 'dɛ:- / "over there,"

It may be that in perceptual terms this flap is easier to learn from the model language than dental fricatives or frictionless continuants. It is noticeable too that those

speakers who produce adult-type allophones of /ð/ only infrequently, tend to favour the continuants [ð̥] or [z̥], rather than the voiced inter-dental fricative. This suggests that the former articulations may be somewhat more distinctive in perceptual terms than the latter:

Andrew: ['ð̥vɪː, æɪ 'ð̥:] / 'ðe:r, ræj 'a: + / "There they are."

David: [ð̥æɪ 'æɪn?] / ð̥æj 'æɪnt + / "They ain't."

Trevor: ['wɛðə 'k^ʰɒdɪ, lɔ̃ʔcɪj 'bʷ^ʰcɪ 'zɛn]
/ 'wɛðə 'kawdɪ, lɒks 'buk 'ðen + / "Where the Goldilocks book then?"

iv Medial and Final /ð/

In medial and final position /ð/ is rare among these speakers. It occurs twice medially, and not at all finally:

Mark: ['næð̥ɪ 'hæʊs] / 'næð̥(r) 'hæ:s / "another house"

Debby [ə 'næð̥:ə, wʌn] / ə 'næð̥ð̥ə, wʌn + / "another one."

However other speakers show that final /ð/ in the mature model is perceptually different from /v/ for them by using sounds not normally associated with the usual substituted /v/. For Peter, for example, /ð/ in final position is replaced by /d/, as it may be in initial position. For Andrew the glottal stop may be used in place of /ð/:

Peter [,wɪd^z, wɪd^z 'ʔæp^hɒs] / ,wɪd, wɪd ə 'æpɒws + /
"with, with... apples!"

Andrew: [,wɪʔmɪi 'maməɪ] / ,wɪpmɪj 'mamɪj / "with my Mummy.."
 ['wɪʔə 'pʰʊsəɪkʰ æʔh] / 'wɪtə 'pusɪj kæt+ /
 "with a pussy-cat."

This may be a first step towards differentiation of /ð/ in final position from other phonemes; an indication that at this early age these speakers have learnt that a word such as "with" may have two forms, one with /v/ and another with a phoneme that is not /v/.

v /s/

A number of variants of /s/ are found in the speech of these children which are peculiar to Nursery and younger groups of speakers. There is the voiceless lateral fricative [ɬ]

Mark: [ʊʊʔə 'bɪgɔŋɔ] / ʊw 'sɔw 'bɪgɔns+ / "Ooh it's all big
 ['wʊɬ ,æɪ 'gɔʔɔ] / 'wʊs ,æj 'gɔt+ / ones."
 "What's he got?"

David: ['ʔɪɪɪ 'gɜvɪ : 'ɪnɪə 'pʰɔnɪ] / + 'ɪrɪjgəws 'sɪnnə 'pɒn+ /
 "Here he goes, in the pond."

There are voiceless pal^aatal fricatives, produced with the front of the tongue and the hard palate - [ç] - and with added velarization, giving more 'back' resonance - [ç̠] :

Trevor: ['dɪç 'væɪç] / 'dɪs 'ræjs+ / "this race."

Denise: ['ʔɪ : çgɔʔ 'dʒɑ : mæs] / + 'ɪjsɜt 'dra : mæs /
 "He's got 'jamas"

Peter: [ˈdʌtɪzˈsɪpəz] /ˈdotɪzˈsɪpəz/ "got his slippers"

Tracy: [ˈsɪlɪdɒg] /ˈsɪlɪdɒg/ "Silly dog"

Debby: [weɪˈʃʊn] /wɪjˈsuwn/ "We soon..."

As at 9 years, palatalized [ɟ] occurs, but is much more frequent at this than at the older age (see V, 4.2.1v1):

Andrew: [ˈstæˌnˈdʌpʰ] /ˈstænˈdap+/ "stand up."

Margaret: [ˈlɔːdʒəˈbɔːs] /ˈləwdʒəˈbows+/ "loads of balls."

Trevor: [ˈsɪˌwʊz] /ˈsɪˌwʊwz+/ "squirrels."

Similarly the dentalized fricative [ɟ̪] has greater frequency in Nursery speech. The more heavily dentalized [ɟ̪ʰ] and the dental fricative [θ̪] are found in the speech of the same children who dentalize /s/:

Fern: [ˈlʊtəˈdɪsˌwæn] /ˈlutəˈdisˌwan+/

"Look to this one!"

[ɪtˈbʌstɪd̪] /ɪtˈbʌstɪd/ "it busted"

Denise: [ɛˈnæɪmθəˈneɪs] /æjˈnæjmsəˈnijs+/

"My name's Denise."

Lynn: [ˈaɪˌskɪmˈvæn] /ˈaɪˌskɪmˈvæn/ "ice cream van"

[ˈdɪkˈeɪbɔːd̪ˈbeɪsθ̪] /ˈdɪkɪjˌbʌd̪ˈbeɪs+/

"...Dicky-bird best."

[ˈθ̪eɪwɔːtˈðætɪz] /ˈsɪjwɔːtˈðætɪz/ "See what that is"

Andrew: [ˈkɪstəɪz] /ˈkɪstɪjnz/ "Christine's"

[ˈlɑːsˈnʌt] /ˈlɑːsˈnʌt+/ "last night."

A dentalized plosive [ɟ̪] is also found occasionally for /s/: a less mature articulation in terms of Jakobson's order of acquisition of phonemes, which puts fricatives at a later stage than plosives at the same point of articulation:

Fern: [ˈdɛ.ɪnəˈt̪ɔ:] /ˈdaɪnəˈto:+/ "Dinosaur."

As at older ages the spread-tongue alveolo-palatal [ɲ] is found among these children in positions immediately preceding other consonants, though it may also occur in other contexts:

Janis: [ˌɹɛɪˈnɔɾtɛ, ɹɪɔ̪] /ˌɹaɪˈnɔstɛ, ɹɪɔ̪+/ "Rhinoceros."

Peter: [ˈdɪɾbʊʔʰ] /ˈdɪsbʊk+/ "this book."

Debby: [ˌlɪɾˈwɑn] /ˌlɪsˈwɑn+/ "this one."

Trevor: [ˈtʁʊ, ɾɛz] /+ˈɛw, sɪz+/ "Horses."

Margaret: [ˈðæʔɾɪʔˈɪɛ] /ˈðætsɪzˈɪ:+/ "That's his ear."

In all these varieties it would appear to be the case that where these children have allophones of /s/ that are divergent from the mature norm [s], they are more grossly divergent than at older ages. Dentalizing, for instance, extends to [s̪⁰] and [θ], whereas the slightly dentalized [s̪¹] is not a Nursery form (see III, 5.4vi).

A very long voiceless fricative glide is recorded from two speakers in the same word "house". This glide continues the lip-rounding at the end of the [ɥ] allophone of /æ:/, which

Peter: ['ëp'əndɪʒ 'ɪɪʒ] / 'əwpendɪz 'aɪz+ / "opened his eyes."
 Fern: ['ɪː ,wæɪz] / 'ow ,wæɪz / "always"
 Margaret ['zædʒə' bɪs ,kɪʔ] / + 'ædə 'bɪsk ,ɪt+ / "Had a biscuit."
 Andrew: ['dæɪəɪɪð] / 'derɪɪz / "there he is"
 Trevor: [,bɪg 'bɔɔzʒ] / ,bɪg 'bɔwz+ / "big balls."
 Steven: [ðɛz 'tʰəʊ] / ðɛz 'tuw / "there's two"
 Peter: ['hæɪz 'dɛə d] / 'hɪz 'ded+ / "He's dead."
 Trevor: ['bɪg 'bɔɪz] / 'bɪg 'bɔɪz / "big boys" "

The voiced palato-alveolar [ʒ] appears more frequently in Nursery speech for /z/ than does [ʃ] for /s/. This can probably be attributed to the relatively early emergence as a phoneme of /ʃ/ , and the relatively late appearance of /ʒ/, which has a more limited distribution and lighter functional load than /ʃ/ in Cockney. [ʒ] can be considered at this age as an allophone of /z/. In some places its occurrence is conditioned by a nearby [ʃ]

Peter: [ɪʒ 'ëp'ənd] / ɪz 'əwpend / "He's opened..."
 ['bæʃɪʒ 'mɔʊtʰə] / 'bæʃɪz 'mɔwte / "bash(ed) his motor"
 David: [ʃəɪʒ 'aʔp] / ʃɪɪz 'ap / "She's up..."

rii /ɪ/

For most children of this age this phoneme is at a developmental stage where the contrast of /ɪ/ and other consonantal items - in particular /s/ - is occasionally but not consistently

Andrew: ['smæʃpʰə'ðæɪʔ, ɛʊs] / 'smæʃ-pe'tæjt, əws+/
 "smashed potatoes."

Debby: ['wɔʃ;lɪ'sæɪ] / 'wɔʃələj'sæj/ "What shall I say?"

Peter: ['wɔʃ,ɪ-n] / 'wɔʃ,ɪn+ / "washing."

There is no evidence to show that children who cannot produce [ʃ] are able_{at this stage} to realize a^{consistent} contrast of /s/ and /ʃ/ with other segments, such as [ç] , [ʒ] :

Trevor: ['kʰʊʒA'wɛnʔ, tɛʊ] / 'kusaɪ'wɒnt, tuw+/
 "because I want to."

" : ['nʌʔ'fɪnɪʒtʰ] / 'nɒt'fɪnɪs(ʃ)t+ / "not finished,"

/ʃ/ seems to give some articulatory difficulty to some speakers, who produce fricative glides in which the articulators move towards the desired articulatory position, friction being produced before that position is reached:

Steven: ['næʔsə'pʃeɪ] / 'nætsə'ʃɪj+ / "and that's a 'she'."

Paula: ['sʌksən'sʃəʊz] / 'sɒksən'ʃuwz / "socks and shoes"

David: ['sʃeɪ'æstə] / 'ʃɪj'æstə / "she has to"

ii /h/

Compared with the recordings of 9-year old children - who were probably much more aware of the formality of the interview situation than Nursery children would be - /h/ is found relatively infrequently in the recordings of these informants. Some speakers who use this phoneme are relatively consistent

by older standards:

Fern: ['hæp[?]l[?]leə' ɛv[?] p[?]ɑ:ftə] / 'hæp-lɪj'er'ra:ftə+ /

"happily ever after."

[ɛ?[?] 'hæʊm] /ət-'həʊm+ / "at home"

Debby: ['mæɪk^oɪnə'hæ.ʊs] / 'mæjkinə'hæ:s+ /

"making a house."

['brɪd^s_o, ma. 'hæʊs, dʒ[?]est'hɪ:] / 'bɪld-,maj'hæ:s,dʒest -hɪ: /

"build my house just here"

Lynn: [hɪɪ'hɔ̃ʊ, dɪzɪ?[?] ɔnɪz'hæəd] / hɪj'haw,dɪzɪt'ɔnɪz'hæd+ /

"holds it on his head."

['hævɪnə'p^hɑ:t^sɪ] / 'hævɪnə'pɑ:ti+ /

"having a party."

However there are a great many cases of intrusive /h/, where initial /h/ is produced in a word that starts with a vowel in older speech. It is not unreasonable to suppose that before children have learnt the lexicon of words which may begin with /h/, there is a stage when initial /h/ and zero may alternate in any word that starts with a vowel. The child observed the behaviour of his target models, and notices that /h/ occurs at the beginning of words when the model is speaking carefully, but not when speech is more rapid and less formal. An early phonological rule is then induced, stating that that careful speech, such as might be used in telling a story, repeating the names of objects in a picture-

book, or talking to adults other than parents, is characterized by a high proportion of initial /h/:

Lynn: [t^sə'hɛi²t^s,lɛm] /tə'hɪjt-,lɛm+/
 "to eat them."

Debby: [ˈjəʊ kʰævɛi'hɒn] /ˈjuw kærɪj'hɒn+/
 "You carry on,"

Margaret: [ˈhɛɪɪfən] /ˈhɛɪɪfən+/"Elephant."
 [ˈhɪŋkʰ] /ˈhɪŋk+/"Ink."

There is little variation in the realization of /h/ at this age. One case is recorded of a velar fricative [x]

Debby: [ˈnɪ:lɛi'brɪd'xɛʊs] /ˈnɪ:lɪj'bɪld'hæ:s+/
 "nearly build house."

4.5 Nasals

1 /m/

There are no important differences between the realization of /m/ at this age and at 9 years. Medial /m/ may be lengthened:

Debby: [ˈmAm:ɛɪəm'bæɪbɛɪ] /ˈmamɪjəm'bæɪbɪj/
 "Mummy and Baby,"

Non-nasal variants are found at this age, though there are none of the ingressive type that some older speakers use. These are presumably rather too sophisticated, in articulatory terms, for young speakers:

David: [ˈzabt'ɛɪ'dabt^sɛɪ] /+ˈabtɪj'dabtɪj/ "Humpty-Dumpty"

Peter: [tʰæs tʰibʰ] /tæs-tib+/ "That's Tim."

Margaret: [bʲəuzikʰə, bɔʔks] /bjuwzikow, boks+/

"musical box,"

It is noteworthy that the only speaker in this study who could really be said to have a severe cold (though this is not, admittedly, the same as adenoidal infection) at the time of recording was Debby (4,6), who had no difficulty in producing nasals [m,n,ŋ] and did not in fact produce one non-nasal variety. This is suggestive of the fact that those who have non-nasal variants of the nasal phonemes have learnt them from other models, rather than acquired them through physiological necessity.

Rounded /m/ - [m̠] is an expression of /mw/ in:

David: [eɪʔnɛːsæm̠ɪdʒ] /'ɪjten, eːsæmwɪdʒ/ "eating their sandwich"

and of /w/ in:

David: [ʃeɪm̠ɪnɪdeːgəʊ] /ʃɪj'wɒnɪdeːgəw/

"She wanted to go."

ii /n/

Like /m/, /n/ may be doubled in medial position:

Mark: [ˈvɪnːɪ, gə] /'vinni, gə+/ "vinegar,"

In deliberate speech an utterance-final /n/ may have a strong voiced release, creating an extra non-phonemic syllable:

Margaret: [ˈspuːn.ə] /ˈspuwn+/ "Spoon."

Non-nasal forms are found for /n/ - the alveolar voiced plosive and the alveolar voiced flap [ɾ], both of which are to be regarded as /d/:

David: [ðy'dəv] /ow'dəw+/ "Oh no!"

Peter: [p'pəʊʃədʒ] /'pəʊʃəd+/ "portion!"

Margaret: [ə'baɾɪ,væbrɪʔ] /'ə'baɪ,ræbɪt+/ a bunny rabbit

David: [ɪɾɪɪ,bɪg'næɕ] /'ɪdɪj,bɪg'næː+/ "Isn't he big now?"

/n/ and /j/ may coalesce into one palatalized segment [ɲ]:

Peter: [ɲəu'wəʊnʔ] /njuw'wəʊnt+/ "No you won't!"

111 /ɲ/

Those speakers who have difficulty with velar plosives may be expected to have similar trouble with this nasal, and this is in fact the case with Peter. The alveolar /n/ is usually substituted in his speech:

[ɪɪz'dʒɪnʔɪ'wəʊ] /ɪjʔdʒɪntɪn'wəʊ/ "he's drinking
water..."

/ɲ/ may also be replaced by /n/ in the speech of those children who have mastered velar articulations:

David: [ɪ'ɲɪnʔɪ'bɛʔ] /'bwinɪp'bɛk/ "bring it back"

This is presumed to be by analogy with the alternation of /ɪn/ and /ɪɲ/ that can be observed in participial endings, at least among older speakers (see III.5.5iv).

4.4 Liquids

i /l/

A feature of Nursery speech is a high proportion of /l/ for initial /ð/ and also for medial /t/:

Andrew: ['luk^xə'lɛm,bɔʊ²s] /'luke'lɛm,bəʊts/

"Look at them boats"

Mark: ['liɔwAn'liɔby²k^x] /'liɔwan'liɔbuk+/

"this one, this book."

Steven: ['diɔn'gɛliɔ'in] /'diɔn'gɛlit'in+/

"didn't get it in."

David: [æɪ'k^xʊ.gɛ'læɔ?] /æj'kuŋge'læ:t/

"They (he?) couldn't get out"

Palatal and palatalized laterals [ɭ], [ɮ] are found occasionally in the speech of the younger children in this group:

Mark: ['ɮɛə'pɬæɪ] /'le: 'plæjin/ "they're playing"

Trevor: ['k^xɔɭə'bɛ:z] /'kol(j)ə'bɛ:z+/ "Koala bears."

Finally and before consonants /l/ is normally velarized at this age, though in one place Trevor reverts to an earlier phonological stage when he uses a clear [l] finally. This is under the pressure of excitement (see above, 3.2 iv).

/j/ may assimilate to /l/ before another /l/:

Peter: ['lɛ,lɛ^s.ʊ] /'le,ləw+/ "Yellow."

11 /r/

Many of the members of the Nursery group have not mastered /r/ fully, and replace it at times with /w/:

Steven:	[¹ gɔʔv ¹ wɨɪd]	/ ¹ gotu ¹ wɨɪd /	"got to read"
Tracy:	[fɔ̃ə ¹ ward]	/fo:ə ¹ wajd/	"for a ride"
Peter:	[¹ ʔawɪnd ²]	/+ ¹ owɪnd ² +/	"Orange."
Lynn:	[¹ p ^h ɔwɪd ³]	/ ¹ powɪd ³ /	"porridge"

The labio-dental continuant [v] or [ɸ] is by far the most frequent allophone of /r/ at this age (see V,4.411). It is probably easier for the child to master the comparatively simple movement of teeth and lower lip than the fine muscular movement involved in curling the tongue-tip. The 9-year old norm for /r/ usually has some secondary labio-dental articulation, and it may be that the labial feature of /r/ is perceptually as significant for children as the retroflex or post-alveolar feature:

Mark:	[¹ lɔueɪ ¹ lɔueɪ]	/ ¹ lorɪj/	"lorry"
Fern:	[¹ venzə ¹ wæɪ.ɪ]	/ ¹ ranzə ¹ wæj+/	"runs away."
David:	[ə ¹ lɔŋ,ɸaɪd]	/ə ¹ lɔŋ,raɪd/	"a long ride"
Debby:	[¹ p ^h ʔ2sə ¹ bɾəʋa ² p ^h]	/ ¹ putsə ¹ bi:rap+/	"puts the beer up."

Where a speaker produces a post-alveolar continuant it seems to occur predominantly in inter-vocalic positions at this age.

It is possible that [ɹ] presents less articulatory problems in this position; the tongue-tip does not have to be held in one position, but can be moved into and then away from the retroflex position as the tongue moves from one vowel position to the next:

Paula: [læfde'dɔ:ɹæp^hən] /læfde'do:ɹæwpent/
"left the door open"

Denise: [ɪnə'æɹə,plæɹɪ] /ɪnə'rere,plæj/
"in a aeroplane."

Janis: [ɹɛɪ'nɔɹte,ɹɪdʒ] /ɹaj'noste,ɹɪdʒ/
"rhinoceros."

Andrew: [ɪdæɹɪɪɔ̃] /ɪderɪjɪz/ "there he is"

Steven: [ɪsɛɹ:ə'veɹɪɪ,kɪɹvə,p^hɪ'g] /ɪsɛrre'verɪj,kleɹə,pɪg/
"This were a very clever pig."

As in this last example, inter-vocalic /r/ is lengthened at this age, a feature of /r/ that is not found in mature speech:

Peter: [ɪwɪɹ'bæɹv:ə] /ɪwɪl'bærrə+/"wheelbarrow"

Andrew: [ɪðɛv:ɹɪ'ɑ:ɪ] /ɪðer,ræj'ɑ:+/ "There they are."

Although [v],[ɹ] are considered as allophones of /r/, and the majority of their occurrences are in places where the mature model would have /r/, there are a number of cases of these segments appearing for /w/. Some of these may be due a still imperfect differentiation of the two phonemes /r/ and

/w/. Other cases may result from over-compensation by a speaker who previously replaced /r/ with /w/, and having learnt that this was incorrect by older standards, now suppresses /w/ in favour of /r/. It is noteworthy, however, that when /r/ replaces /w/ it is always the labio-dental allophone of /r/ that is involved, never - in this study - the post-alveolar:

Mark: [ˈvɪlɪʔ] /ˈrɪlɪt+/ "...will it?"

Paula: [əˈɡʊdʔvən] /əˈɡʊd-rən/ "a good one"

Lynn: [ˈvaɪndɪʔəˈvæʔnd] /ˈraɪndɪtəˈræ:nd/
"wind it around."

Trevor: [Amˈvæɪʔɪn] /əɪmˈræɪtɪn/ "I'm waiting"

4.5 SemiVowels in Nursery Speech

In examining the behaviour of /w/ and /j/ at this age in their vocalic function, as the end-points of fronting and retracting vowels, we find further evidence that children tend to learn the forms of vowels associated with positions of prominence in the utterance. It is in prominent positions that diphthongal vowels have their most extensive glides, and a study of vowels in Nursery speech shows that vigorous closing glides towards /w/ or /j/ are a characteristic of speech at this age. In these glides the closure may be so vigorous as to result in friction at the palatal or bilabial points of articulation:

Fern: [tʰəˈʔɔlədæɪʃ] /tə-ˈɔlədæj+/ to holiday.

Fern:	[ə'slɛɪç²p¹]	/ə'slijp/	"asleep"
Peter:	['vəʊzɛɪç:]	/'rəwzi+j+/	"Rosey."
Mark:	['fʊ²,bəʊβ]	/'fʊp,bəw+/	"football."
Trevor:	[in'nəʊmss]	/in'nəʊs/	"in (the) house"
Peter:	['həʊmst¹]	/'æ:s+/	"house."

These glides correspond to the phonological analysis on which this survey of London speech is based, with the exception of /æ:/, which is here a glide to back close, while this study treats it as a long vowel. In fact this item has characteristics in common with both the retracting and the long vowels (see III, 4.1 iv).

Where one of the closing diphthongs is followed by another vowel in close juncture it often happens, particularly among younger speakers though it is observed at all ages, that a phonetically linking segment [w] or [j] may intrude between the two vowels. This is the result of extreme rounding of the lips in the final part of vowels to /w/, and of extreme closure to a front-close position of the tongue, followed by a rapid transition to the next vocoid, in the final part of vowels to /j/. These are in effect syllable-medial semivowels with consonantal function. If the intrusive glide becomes prominent in relation to the vocoids on either side of it we can consider an extra, consonantal, semivowel to be pro-

duced through the action of something very like extended juncture:

Denise: ['d̥i:sɛiʔə'd̥ɪ̃. 'nə. 'sɔ.] / 'aɪsɪjə'daɪ'nə'so: + /

"I see a dinosaur."

Paula: [,dæiʔ 'æɪnʔ] / ,dæj'æjnt + / "There ain't(sic)."

David: ['lɪʔo'wæʒ] / 'lɪtoʊ'æ:s / "little house"

Debby: ['səʊ'weɪ 'kʰʊdənʔ] / 'səʊ'wiɹj'kudənt + /

"So he couldn't."

Tracy: ['sɛi, jəm'ɪnə 'zəʊ] / 'sɪj, jəm'ɪnə 'zuw + /

"see them in the Zoo."

This phenomenon is not restricted to children of less than 5 years of age:

Kathleen M: ['k^xæʊəə'weɪ, læf] / 'kærow'wiɹj, læjn + /
(6,6)

"Carol Elaine."

Tony S: ['ʔAdəwnʔ, gəʊ'weɪgəɪs] / + 'aɪdəwnt, gəʊ'wiɹgəʊs /
(8,1)

"I don't go, he goes"

but since this is a feature of deliberate emphatic speech we might expect to find it occurring more frequently among speakers with a slower tempo, a more syllable-based rhythm, and a lesser facility in the reductions and coalescences of mature rapid speech - in short, among speakers of the Nursery group's age. When a vowel is followed by another vowel in older speech the tendency is rather for the quality of the first vowel to be weakened - the glide reduced, for example,

and the whole vocoid shortened - than for this type of extreme closure, with the possible production of another intrusive segment, to take place. It is to be noted that /æ:/ is not one of the vowels which may be followed by an intrusive semivowel, so that in this respect the classification of vowels in this thesis is justified. /æ:/ tends to be linked to a following vowel by /r/:

Paula: [ɪzɡɒn'æ²ppæ. 'ɹæɪ] /ɪzɡɒn'apnæ: 'ræj+/
 "He's gone up now, eh?"

ii /w/

This phoneme causes little difficulty to any of the children in this group, though certain allophones of /w/ at this age are rare in older forms of speech - such as the bilabial fricative [β] and the rounded bilabial nasal [ɱ] :

Trevor. ['dæɪ, βɜt 'tɪl, jə] /'dæɪ, wɪ 'tɪl, jə+/
 "They will kill you."

Lynn: ['nəʊβɹɪt^s] /'nəʊwɒt-/ "Know what...?"

David: ['ʃəɪ, ɱɪnɪd] /'ʃɪj, wɒnɪd/ "She wanted"

A labio-dental but rounded segment [w̥] occurs here, though it is relatively rare at this age:

Debby: ['säm̥wɛ 'vɛɹs] /'samwe 'rels+/"somewhere else."

The confusion of /w/ and /r/ is a marked feature of Nursery speech (see 4.4.1 above).

.11 /j/

There is very little to distinguish Nursery usage of /j/ from that of 9-year olds. Linking /j/ is more frequent at this than at older ages, as was suggested above (4.51). Voiced fricative allophones [j] may be a characteristic of younger speakers, being more contoidal in both articulatory and perceptual terms than the semivowel :

Fern: [ə'jəugʌʔ+mAɪn] /ə'juwgoʔ'majn+/ "Have you got mine?"

4.6 Affricates /tʃ/. /dʒ/

These phonemes appear to be well established in the speech of Nursery children, except in the phonemic systems of one or two of the youngest members of the group - Mark, Trevor and Peter, for example. The most common realizations of these phonemes are the alveolo-palatal affricates [tʃ], [dʒ]:

Lynn: [tʰeɪ,tʃA] /tʰɪj,tʃə+/ "teacher."

Margaret: [wɔʔtʃ'pɪæɪ,skɔʊ] /,wɔʔtʃ'plæj,skow/
"watch 'Play-School' "

Tracy: [sɛʊdʒə'lɛɐ] /sɛwɔʒə'le :/ "soldier there."

Mark: [ʼandə'bʊɪdʒ] /ʼandə'brɪdʒ+/ "under bridge."

Fern: [mædʒ,ɪkʰ] /mædʒ,ɪk+/ "magic."

The more palatal [tʃ], [dʒ] are perhaps nearer to the mature norm:

Paula: ['ʒeɪtʃ(ə)ʔɪ?] /'rɪʃtʃetɪt/ "reach at it"

Debby: [ˌdʒəstˈhɪ:] /ˌdʒəst-ˈhi:/ "just here"

In mature speech the palato-alveolar affricates often arise as a result of coalescence of /t/ or /d/ with a subsequent /j/. In Nursery speech we find the beginnings of application of a rule of coalescence. The rule is over-generalized to a context where mature speech does not usually apply it:

Fern: [ɔnəˌʒæɪdʒə.] /ɔnəˌræɪdʒəw/ "on the radio"

It may be as a result of back-formation from this process that /dʒ/ is in some places realized as [dʃ]:

Tracy: ['wɔːslæʔˈdʒɑ:] /ˈwɔːslætˈdʒɑː+/ "What's that jar?"

David: [dʒəˈnʒeʔh] /dʒəˈnet+/ "Jeanette."

though this may also be a result of perceptual confusion among affricates.

Confusions among Affricates

When one considers Nursery realizations of clusters and sequences formed by an alveolar plosive + some kind of continuant consonant, there is evidence of considerable confusion. The pairs /tʃ/ - /tr/ and /dʒ/ - /dr/ are frequently confused, and a rather complex articulation is recorded that seems to combine the palatal quality of one with the retroflex of the other member of each pair - [tʃ̠], [dʒ̠]:

Andrew: [ˈɑːgʌʔˈtʃ̠æɪndʒ̠] /ɑːˌɡɒtˈtʃ̠æɪndʒ̠/ "I got change,"

David: [ˈdʒ̠joːdʒ̠] /ˈdʒ̠oʊdʒ̠/ "George"

It should not be too surprising that these pairs of affricates are confused in Nursery speech, since some alternation of these forms in certain words is found in 9-year old speech. Among the younger group of speakers however there are also confusions between the affricates mentioned above and [ts], [dz], [tʃ], [dʒ]. It is hard to see any consistent direction of substitution among the affricates at this age: all these items are relatively undifferentiated:

- Mark: [ˈtʃɑː²tʰæniʔ] / tra:tʃˈænit+/ "Church, ainit?"
 [andəˈmaɪbrɪd] / andəˈmajbrɪd+/ "under my bridge."
- Trevor: [ˌɛfˈlɪn²tʰ] / +, efˈlɪntʃ+/ "Elephants."
 [ˌdʒäsˈtʰɪtʃe] / ˌdʒasˈtɪlʃe+/ "Just kill you."
 [ˌtrevəˈvɪs] / +ˈtreveˈrɪjs+/ "Trevor Rees."
- Peter: [ˈæ.nɔ̃sü] / ˈændʒuɪw+/ "Andrew,"
 [ˌdʒɪnʔɪ] / ˌdʒɪntɪn/ "drinking"
 [ˌdʒɛːˈtʃɪn²s] / ˌdʒɛːˈtʃɪnts+/ "they're twins."
- Denise: [gɔ̃ʔˈdʒɑːməʃ] / gutˈdra:məs/ "got jamas"
- Fern: [ˈsam.ɔ̃ɪˈtʃɔd.ɪd] / ˈsamədɪjˈtroddɪd/
 "somebody trodded"
- Tracy: [ˈtsæɪsɪ] / ˈtræjsɪ+/ "Tracy."

5.1 Archiphonemes in Early Phonology

Many of the characteristics of Nursery phonology studied in the foregoing sections can be summarized by saying that young

children operate with phonemic units which in comparison with mature phonologies are cruder, less differentiated, and cover a larger articulatory areas. A useful concept in this connection is the archiphoneme, a phonological unit which incorporates two or more of the mature phonemes, and from which these phonemes will eventually emerge, and can be observed emerging in this study. The process of development is one of increasing contrastiveness between what were originally allophones of the same archiphoneme. In most of the children in this Nursery group the outlines of the mature phonemic system are clear, almost perfectly so in the older members of the group. However, just as a study of children's grammatical mistakes and over-generalizations reveals details of their developing grammatical structure, so may the earlier stages of phonological development be discerned in the areas of confusion and over-lapping of certain phonemes, and in the relative absence of confusions between other phonemes.

5.2 Vowel Archiphonemes

i Short Vowels

It has been seen that in the front region there is for some speakers an overlap of /i/ and /e/. There is also overlapping of /e/ and /æ/, of /æ/ and /a/, and in some places of /e/ and

/a/ - as in Trevor's [ˈdaʔ, wɛɪn] "that one" and different realizations of "that", [daʔ], [dæʔ], [dɛʔ]. However /i/ and /æ/ , or /i/ and /a/, are never found to overlap, so that a basic contrast may be postulated between the short vowels in this area in the archiphonemes //I// and //AE//. //I// will develop later into /i/ and /e/, while //AE// will split three ways, into /e/, /æ/ and /a/. Thus some speakers may have an /i/-type vowel for mature /e/ in some words, and an /æ/-type vowel for /e/ in others - cf. Fern's [ˈwɪndɪɪhæʊs] "Wendy-house" and [ˈtʃæwɪ] "cherry". One possibility is that /e/ may be the first contrast to develop from //AE//, from an area of overlap between this archiphoneme and //I//. Another possibility is that //AE// may develop two contrasted allophones corresponding to mature /e/ and /a/, with a middle-ground between them which may overlap with either of these two, but which serves to separate them, so that they remain contrastive. Some children may develop one way, some another. One child may have three contrasts in the front area, /i/, /e/ and an //A// incorporating a later contrast of /æ/ and /a/. Another may have /i/, /e/ and /a/, with an area corresponding to mature /æ/, overlapping frequently with both /e/ and /a/. A word with /æ/ in the mature system might be found with both /e/-type and /a/-type vowels, in the latter arrangement.

In the back region we have seen that /u/ and /o/ overlap in stressed and unstressed syllables. This may be explained by an archiphoneme //U// at an earlier stage. Thus "book" would have forms [ˈbuʔcʰ] and [ˈboʔkʰ] -//BUK//.

The central short vowel /e/ seems to emerge relatively early and does not overlap with any other short phoneme consistently.

ii Long Vowels

/i:/, /e:/ and /o:/ are often replaced by the corresponding short vowel /i/, /e/, /o/, causing a reduction in the short-long contrast. Archiphonemes //I//, //E//, //O//, incorporating long and short phonemes, are feasible. It is probable that these contrasts are not developed until after the split of //E// from //AE// and of //O// from //U//. The long phoneme /æ:/ has a greater functional load than /i:/, /e:/, /o:/ (cf. V, 3.21) and it seems therefore reasonable to suppose that /æ/ and /æ:/ are in contrastive distinction within the phonological system at an earlier stage. /æ:/ probably emerges from //AE// before the latter begins to split into its component short vowels. This long vowel is in any case distinguished from /æ/ by more than length alone, having also rounding and glide to back half-close among its features. /ɑ:/ is in contrast with no short vowel, though it may be that it develops in contrast with /aj/ from some archiphoneme

such as //AJ//. For some speakers /o:/ and /a:/ are very close in quality and often overlap, so that /o:/ may have two sources, developing either from //O// in contrast with /o/, or from //A;// in contrast with /a:/. For Mark and Tracy there can be advanced an archiphoneme //A:// incorporating /a:/ and /ə:/ (cf. 3.2xi, xviii above). However /ə:/ probably develops for most speakers from //ɜ//, incorporating /e/ and /ə:/.

iii Fronting Vowels

There is frequent overlapping of /ij/ and /æj/ in Nursery speech, particularly for the younger speakers, Mark and Trevor. Here then an archiphoneme //EJ// can be postulated. This is contrasted with the back glide //AJ//, from which emerge /aj/ and /oj/ - /oj/ has relatively open starting-points for many Nursery children, and often overlaps with /aj/. From //AJ// also may develop the contrast of /aj/ and /a:/.

iv Retracting Vowels

The vowel /əw/ seems for many speakers to occupy a middle ground between /ow/, /uw/ and to a lesser extent /æ:/. For all these vowels it may be substituted (cf. 3.2xv above). For a speaker such as Mark we may erect an archiphoneme //UW//,

which is in train of splitting into two contrasting phonemes /uw/ and /ow/, with a middle ground from which /ew/ is to emerge. /uw/ and /ow/ do not overlap at all frequently, and it may be presumed that this is a basic opposition among glides to back half-close-to-close. Confusion of /uw/ and /ew/ is more frequent than that of /ow/ and /ew/, and it may be that another pattern of development sees the early formation of /ow/, distinct from //UW// in which /uw/ and /ew/ are as yet still merged with, for some speakers, some instances of /æ:/. The basic organization among retracting, rounding glides seems to be on the axis of //UW// and //OW//. /ew/ emerges either from an area of overlap between them, or from a subsequent split of //UW//. /aw/, a comparatively rare phoneme, probably develops much later, and would seem to emerge from an archiphoneme incorporating it and /ew/ - say, //ɛW//.

These developments may be expressed in diagrammatized form (Figures 5-8). It is not suggested that these diagrams correspond to the phonological development of any one speaker. Rather these archiphonemes represent areas of maximal contrast within the vowel system outlined in this chapter. Some children may develop a contrast between /u/ and /o/ long before //AE//

is differentiated into its component phonemes. Some may develop /o:/ from //O//, incorporating long and short vowel, while others develop /o:/ and /a:/ from the one unit //A://, and so on. The changes plotted here seem the most likely way for the child's primitive phonological units to develop, but there may be others.

Changes in Vowel Quality

It will be seen that as the number of contrasts in the child's phonemic system increases there are slight changes in the phonetic quality of some vowels. This is most noticeable in the series of retracting vowels, where Nursery allophones of /uw/ and /ow/ have rather more open starting-points than their ~~mature~~ norms. As /əw/, /æ:/ and later /aw/ emerge, all of which have starting-points in the half-open to open area, allophones of /uw/ and /ow/ become more narrow glides, with closer starting-points. Similarly /o:/ and /oj/ are rather more open in some of their allophones at the Nursery than at the 9-year old level. It could be argued, ^{either} that their Nursery realizations are due to confusion of these items with /a:/ and with /aj/ respectively, or that confusion of the items is due to the more open nature of their Nursery realizations. The first of these explanations fits in much more conveniently with the concept of the breaking-down of archiphonemic units.

1. Pre-Nursery
Stage

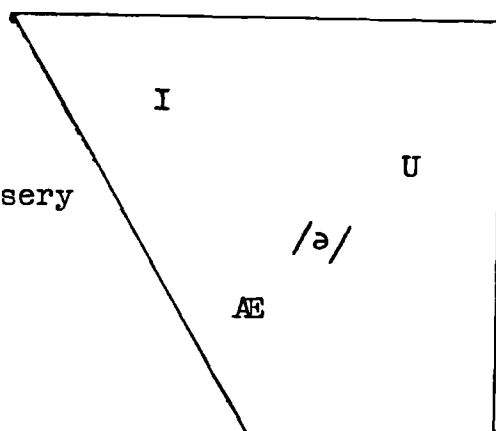
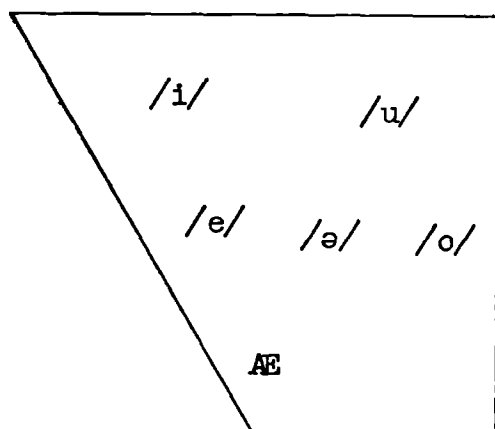
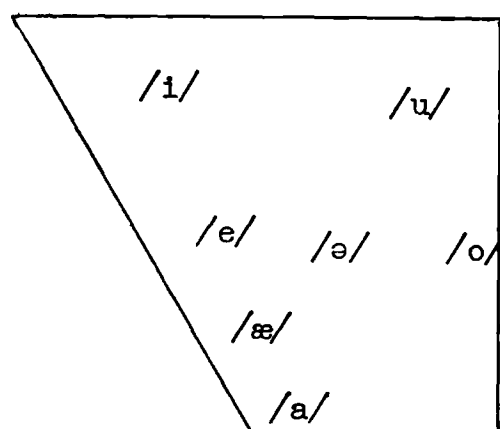
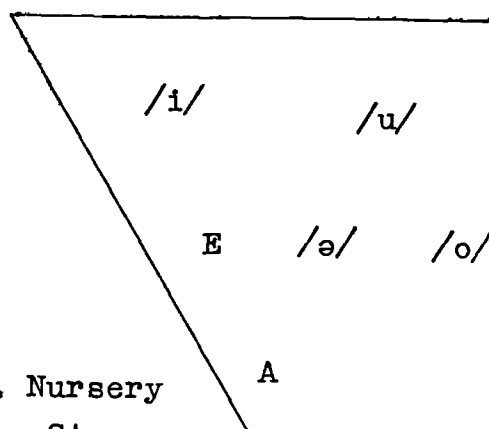


Figure 5.
Development of Short
Vowel Archiphonemes



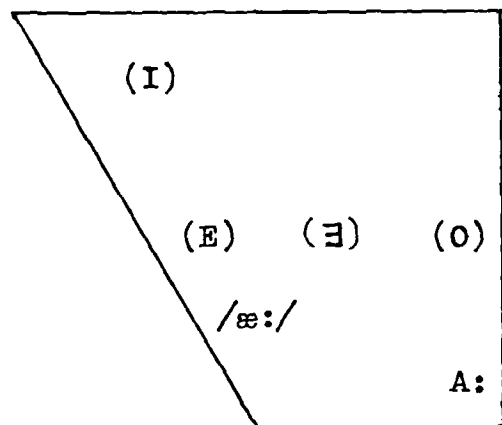
OR

2. Nursery
Stage

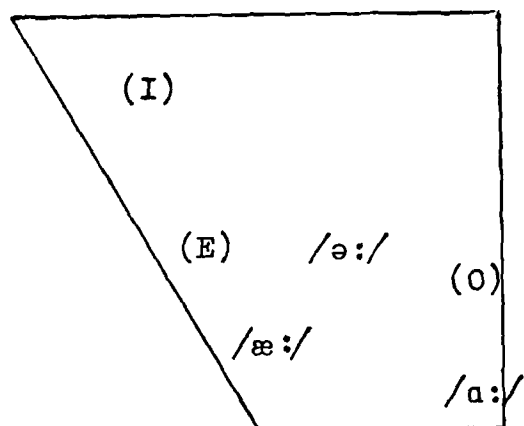


3. Mature Stage

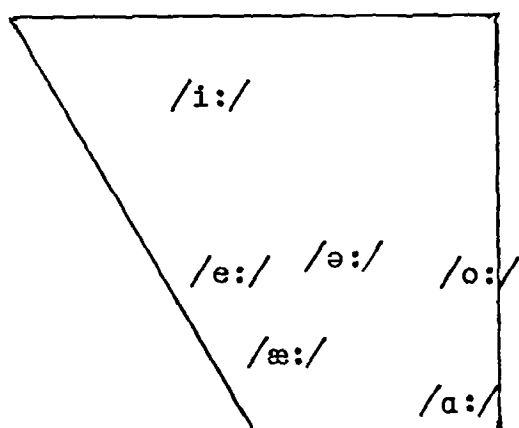
Figure 6..Development of Long Vowels



1. Pre-Nursery Stage

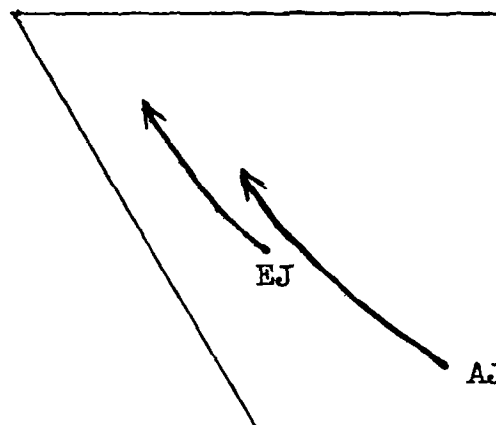


2. Nursery Stage

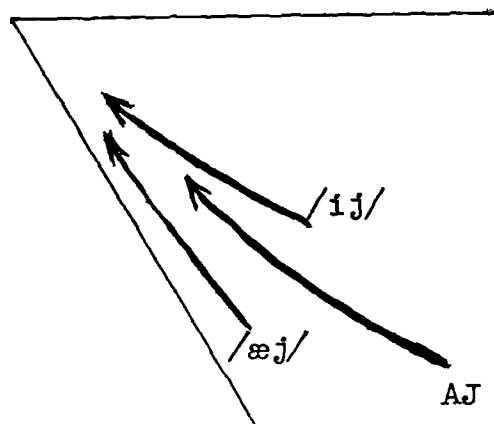


3. Mature Stage

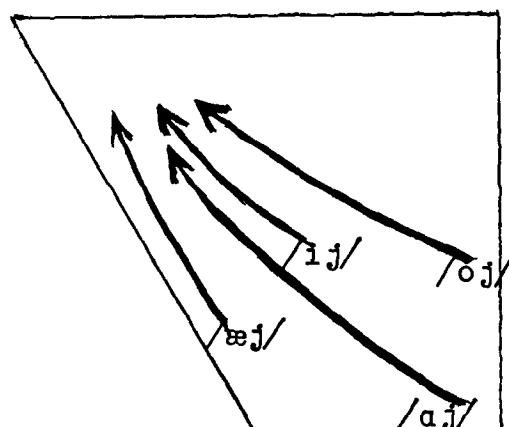
Figure 7. Development of Fronting Vowels



1. Pre-Nursery Stage



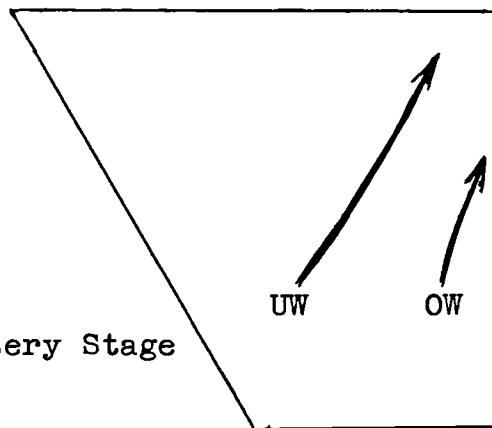
2. Nursery Stage



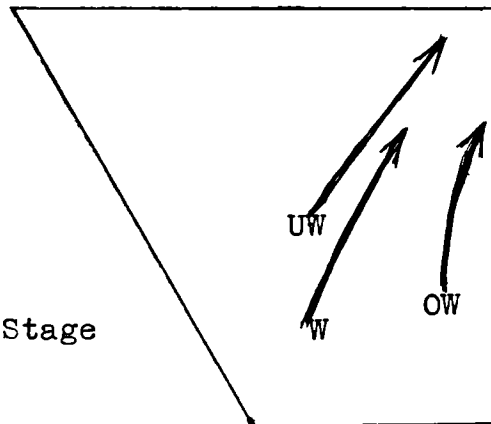
3. Mature Stage

Figure 8. Development
of Retracting Vowels

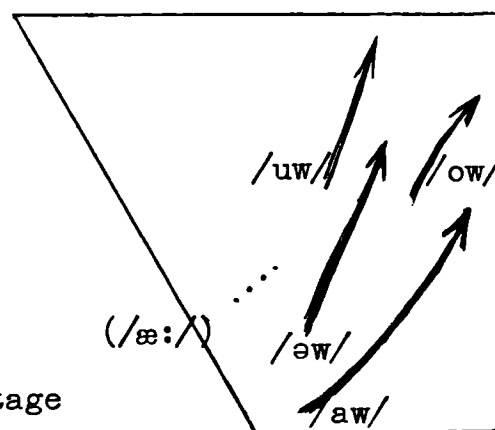
1. Pre-Nursery Stage



2. Nursery Stage



3. Mature Stage



5.3 Consonantal Phonemes

The concept of the archiphoneme may be applied to the development of consonantal phonemes. As with vowels, so with the consonants the laws of irreversible solidarity propounded by Jakobson apply.

i Plosives

Among the plosives most speakers have a complete system. In the speech of Peter and one or two other speakers can be seen traces of an earlier phonological state where velars and alveolars were not differentiated, and which had only four plosive items - /p/, /b/ and the archiphonemes //T// and //D//, incorporating respectively /t/, /k/ and /d/, /g/.

ii Fricatives

The minimal fricative system here appears in the speech of young informants such as Trevor, for whom /f/ and /θ/ are undifferentiated, giving an archiphoneme //F//, and /s/ and /ʃ/ are only just starting to gain contrastiveness, emerging from a fricative archiphoneme //S//. //V// subsumes at this stage both /v/ and medial and final /ð/, but not initial /ð/. This item has a peculiar history, developing as it does from a number of reduced oppositions involving different archiphonemes in different contexts. The main archiphonemic source

of initial /ð/ is //D//, but there are also lesser sources in //N//, //Z//, //L//, //S//. /z/ and /ʒ/ - which develops relatively late - are incorporated originally in //Z//. In the present study the voiced -voiceless distinction appears to operate consistently between //S// and //Z//, but /f/ and /v/ are not so clearly contrasted from the point of view of voicing. This suggests that the emergence of /f/ and /v/ from an archiphoneme //F// (which may still incorporate /θ/ and medial/final /ð/) is relatively late.

iii Nasals

/m/ is rarely confused with other items. //N// may not yet have split for some speakers such as Peter into /n/ and /ŋ/.

iv Liquids and Semivowels

For many children /r/ and /w/ are undifferentiated for a considerable period, indicating the existence of an archiphoneme //W//. /j/ and initial and medial /l/ are distinguished as phonemes at a relatively early stage - though notice Peter's /'le,ləw/ for "yellow", and Mark's /'ædʒi/ "hardly".

v Affricates

Many of the confusions noted in the affricate system in Nursery speech are adequately explained in terms of archiphonemes. At first it appears that a number of different

affricates are undifferentiated: for this state of affairs two super-archiphonemes may be proposed - //TS//, //DZ// - these incorporating not only /tr/, /dr/ and /tʃ/, /dʒ/ but also /ts/, /dz/, /tw/ and other such less functionally weighted items. A later split separates these less frequently occurring and less close-knit sequences from the archiphonemes //Tʃ// and //Dʒ//, from which eventually are to emerge /tʃ/ and /dʒ/, and /tr/ and /dr/.

vi Consonant Clusters

v1 The same processes will be found at work in consonant clusters. Here it is regretted that a shortage of examples in the speech samples collected from these children prevents any detailed study. However an example of what might be found in a larger study is seen in the speech of the five-year old Paul Snellin (see V, 4.4v). In this speaker's phonological system clusters of voiced plosive + /r/ are undifferentiated in the form /gr/. We can thus speak of a supercluster //GR// in the words "bridge" ['gʁɪdʒ], "drunk" ['gʁʌŋkˣ], "green(mouse)" ['gʁeɪm, mæ:s]. More extensive studies in the speech of children at this age and younger would probably reveal more of these mass undifferentiated units. The development of consonantal items within this period may be presented in tabular form as follows:

Plosives

//T// - - - - - /t/ + /k/

//D// - - - - - /d/ + /g/ (+ initial /ð/)

$$\|F\| \dots \|F\| \dots \|F\| + \|\theta\|$$

//s//_ _ _ _ _ /s/ + /ʃ/

//Z// - - - - - /z/ + /3/ (+ initial /ð/)

Nasals

//N// - - - - - /n/ + /ŋ/ (+ initial /ð/)

```
//L// . . . . . /1/(+ initial /ø/)
```

$$//W// \dots \dots \dots //W/ + //r/$$

Affricates

//TS// - - - - //T// - - - - /t/ + /tr/

/ts/, /tw/ etc.

$$//DZ// \dots //D\beta// \dots / \beta / + /dr/$$

/dz/ etc

CHAPTER V - DEVELOPMENT FROM NURSERY TO MATURE PHONOLOGY

1.1 Informants

This chapter is based partly on the speech of the children already mentioned in previous chapters, but predominantly on that of 27 children, aged from 5 years exactly to 8,1. Three of the boys were also used as informants^{in previous chapters}, two at a slightly lesser age - David II and Steven II - and one at a somewhat greater age - Clifford I. The children are as follows:
(Class 5)

Lorraine Beswick ('Lorraine'). Aged 5,0. 1st of 2 children.

Paul Sheekey ('Paul Sh'). Aged 5,3. 4th of 4.

Paul Snellin ('Paul Sn'). Aged 5,3. 2nd of 2.

Shane Webb ('Shane'). Aged 5,4. 3rd of 3.

Steven Spicer ('Steven^{II}'). Aged 5,5. 2nd of 3.

David Leigh ('David II'). Aged 5,7. 2nd of 2.

Nicholas Ifield ('Nicholas'). Aged 5,7. 2nd of 2.

Kim Chandler - female - ('Kim'). Aged 5,8. 2nd of 2.

Carl De'ath ('Carl'). Aged 5,10. 1st of 2.

Carol Otterwell ('Carol'). Aged 5,10. 3rd of 4.

(Class 4)

Sean Rice ('Sean'). Aged 5,11. 2nd of 3.

Kathleen Moss ('Kathleen M'). Aged 6,6. 1st of 3.

Dawn Edmeade ('Dawn'). Aged 6,6. A twin, and joint 3rd of 4.

Denise McDonnell ('Denise M'). Aged 6,7. 2nd of 3.

Janice Cook ('Janice'). Aged 6,8. 1st of 2.

Stephen Glynn ('Stephen'). Aged 6,10. 2nd of 3.

Paul Hill ('Paul H'). Aged 6,11. 2nd of 2.

Tracy Pollard ('Tracy P'). Aged 7,0. 3rd of 3.

Robby Goddard ('Robby'). Aged 7,0. 3rd of 3.

(Class 3)

Dawn Price ('Dawn P')..Aged 7,4. Family Size unknown; at least
one other sister.

Debra Cox ('Debra C'). Aged 7,5. 2nd of 3.

Terry Sullivan ('Terry'). Aged 7,7. 2nd of 3.

Jill Williams ('Jill'). Aged 7,9. 4th of 5.

Debra Garnes ('Debra G'). Aged 8,0. 1st of 2.

Lindsey Baldock - female- ('Lindsey'). Aged 8,1. 1st of 3.

Tony Simcock ('Tony S'). Aged 8,1. 2nd of 2.

Clifford North ('Clifford I'). Aged 8,1. 2nd of 3.

1.2 Changes in Behaviour. 5 to 8 years

i Social Attitude

In the period covered by the ages of these children there are continuous changes taking place at all levels of behaviour.

One significant change is the growth of a group-orientated attitude among children from the age of 6 to 7 years onward.

This may be presumed to encourage the child in the acquisition of features of the language spoken by other members of his peer-group, if such features are not already present in his speech. This is perhaps not so marked in the children in this study as it might be with, for example, immigrant children from English-speaking areas outside England, or children from other parts of the British Isles. It is presumably at this age and under the influence of the peer-group's pressure to conformity, that some girls begin to adopt those characteristics of voice-quality, and certain specific allophones of vowels and consonants, such as those described in Chapter III (1.3 *etc.*). Tracy P. is a good instance of this.

It is at this age that the British educational system transfers children from the 'infant' to the 'junior' school. In transcriptions of some of the older infants, such as Tracy P., Robby, Stephen, we can see that these children are much more socially-minded than younger children in the class below them. There are references to activities with other children, to 'playing out' with their 'mates', whereas at lower ages, though the children may have a best friend, they do not talk of group-activities, and references to parents or to other members of the family are more frequent.

ii Complexity of Activity

From the age of 5 onwards there is a growth in complexity at all levels of activity, and not least in linguistic activity. In quantitative terms there are increases in vocabulary and sentence-length (Smith 1926), and in the number of syntactic structures that the child is capable of handling. More important, however, is the nature of these structures, which are produced by an increasingly complex system of grammatical transformations, the early stages of which are described by Miller and Ervin (1964), Brown and Bellugi (1966), McNeill (1966). After a certain stage quantitative improvements are less significant, except in size of vocabulary. Improvement then takes place in the efficiency and economy of speech, in its increasing flexibility, and its capacity to handle an ever-widening range of experience. This efficiency may sometimes mean a reduction in the number of units used in an utterance. On the semantic level, for example, we find expressions such as "writing thing" (Paul Sn) and "football mans" (Peter). These are children's coinages which are ultimately replaced by the more economical, as well as more standard forms 'pen' and 'footballers'. A mature sentence may encompass the same number of morphemic units as a younger child's sentence, but it is likely that the number of phonetic

segments and of phonological units will be less. Compare:

Lynn: [ɪˈhʌɪdəʊn?ˈnəʊ] /ɪ(h)əjdəʊntˈnəʊ/
(4,5)

"I don't know"

Kathleen: [ɛˈdənəʊ] /əjˈdənəʊ/ "I don't know.."
(9,2)

It is with the phonological aspects of efficiency and economy of speech that this chapter is partly concerned.

1.3 Phonological Efficiency

- i The most obvious increase in efficiency in this period is increased efficiency of communication resulting from the establishment of stable distinctive contrasts between items in the child's phonemic system. This reduces the number of confusions and ambiguities inherent in the child's speech, a necessary development as his language-situation becomes less syncretic and more referential to objects and experiences outside the immediate range of reference. As reference to things outside the visual field increases, so expressions like "this one", "that thing", "there", become less adequate in a communication system. Not only must the child's vocabulary become more precise, but the phonemic realization of lexical items must approximate relatively closely to adult or mature forms.

i Improvement in Articulation

Linked with the completion of the phonemic system is a necessary improvement in articulation which must also approximate to mature standards if communication is to take place efficiently. The development of articulation through this period is to be thought of not as a simple progression from 'childish' and 'imperfect' articulations to adult 'perfect' forms. In fact on the way to a mature articulation some children pass through some relatively complex articulations, more complex, it may be, than the eventual mature form. Such are the double articulations [fθ] for /θ/, [vð] for /ð/, or the alveolo-palatal plosives [tʃ], [dʒ] for /t/ or /k/, /d/ or /g/.

iii Reduced Forms

As the efficiency of speech increases so the tempo of the utterance increases (cf. IV, 2.2111). The most noticeable product of this increase is the extension of the basic rhythmic unit of speech, the foot. Where the Nursery child typically used a rhythmic unit of ^{one,}_λ two and occasionally three syllables, older children learn to compress more syllables within the foot in such a way that intelligibility is not impaired. This is achieved by the reduction of phoneme sequences in a conventionalized way, the conventions being implicit in the mature model of this form of English. "What did you do?"

may be reduced to /'wɒʒə'duː/, the difference between this and "What ~~do~~ you do?" being supplied by the context. Grammatical items may be greatly reduced in rapid speech, though important lexical items, vital to communication, are less liable to reduction. Thus "What's your name?" /əʃə'næɪm/; "What's your favourite programme?" /'ʊʃə'fæɪvɹɪt'prəʊ,græm/. This again is a feature of a very homogeneous form of speech, a common language in which much information may be abbreviated or omitted because it is implicit, and understood by all speakers. Coalescence of phonemes across word-boundaries becomes increasingly common as the speaker's age increases, as in the reduction of sequences of /s,z,t,d,/ + /j/ to /ʃ,ʒ,tʃ,dʒ/ (see 4.6*in* below).

1.4 Dialectal Features

A further aspect of language development after the age of 5 years is the emergence in the speech of 5 and 6-year olds of features of speech which can best be described as dialectal. These include the use of two-directional glides in the vowels /i:/, /e:/, /æ:/, /o:/, /aɪ/, and the appearance of dialectal forms such as /'ɡəʊn/ "gone" /ɒf/ "off" /'jɔ:n/ "yourn" (for "yours") /'æ:n/ "ourn" (for "ours"). That these features do not occur very much in the speech of younger children

seems to indicate that they are 'surface' features of English, rather than part of the child's basic competence, and are learnt relatively late. The relatively infrequent occurrence of such features among older children in these recordings calls for some explanation. It seems likely that the 5-year old child learns these forms, associated for mature speakers with informal situations, from his immediate family circle: they are almost certainly forms which would be heard in domestic surroundings. The 5 or 6-year old then probably uses these forms in speech in free variation with the more formal elements, which he has also learnt. At this time there is not such an acute awareness in the child of what is a formal and what an informal situation. When the child does become sensitive to the degree of formality in his speech-situation he probably becomes more discriminating in the use of these dialectal features, reserving them for the language of the peer-group and the family circle, while the more formal elements are reserved for school. This formal - informal dichotomy is emphasized by the nature of the British educational system, since the child begins 'formal' schooling at the 6-year stage, after a relatively non-academic year spent in the Reception Class (Class 5 in Fordway School), and it is shortly after this that the child becomes sensitive to s

social situation.

Some informal elements were recorded in the speech of older children, such as Terry, Clifford I, Debra C. This may be because all these children were very talkative and seemed quite unself-conscious. They all appeared to enjoy making the recording, and felt perhaps that the recording situation was informal by contrast with the formal classroom which they had just left.

In contrast, the recording of Dawn Price gives a good illustration of a 7-year old girl's exaggeratedly formal style, or rather of one aspect of the formal style, that associated with recounting a story. This can perhaps be called the 'recital' style (see Appendix B, and cf. also the recital of Janice Cook, and a monologue of Denise McDonnell - more of a soliloquy than a recital).

2.1 The Development of the Phoneme in its Later Stages

The following sections set out to outline some of the later stages in the development of the child's phonemic system. It is hoped to show that the development of each phoneme within the system is rather more complex than a simple progression from a state of 'no contrastiveness', through 'occasional

contrastiveness' to 'complete contrastiveness', as suggested by Lewis (1951, p.171), Jones (1967, p.89). The phoneme seems to evolve, and its features to emerge from the relatively undifferentiated units of archiphonemes, in a way reminiscent of organic growth.

ii History of //S//

The evolutionary process of phonemes can best be followed in the history of one archiphoneme //S//:

a) The archiphoneme //S// has at first a great number of realizations involving voiceless friction produced mainly by means of the tongue and the roof of the mouth, alveolar ridge, or teeth, though there may be nasal fricatives [m̥], [n̥] and other types of fricative. //S// appears in words where the model language has /s/, /ʃ/, and occasionally other phonemes such as /θ/ - /'sɪŋ/ "thing". At first there is no systematic use of allophones in a way corresponding to mature usage.

b) The first sign of an emergent contrast may be said to appear when something like the mature allophones come to be used in words or situations where there is a precedent in the model language: when, for instance [ʃ] or [ʃ̌] is found consistently in the words "ship", "shop", "fish", while other allophones such as [s] are not normally found in these words, but are confined to contexts where mature speakers have the

phoneme /s/ - word-finally after consonants, for instance, and in words such as "horse", "sand". In these situations these allophones are in distinctive contrast, though in others they may be still in free alternation, together with other allophones that occur where the model language may have either /s/ or /ʃ/ - [ʂ],[ç],[θ],[s].

c) In time such 'ambiguous' allophones fall out of use, and the child comes more and more to use /s/-like or /ʃ/-like realizations in his speech, even though these may not always have the same distribution as in the terminal model. In other words, the ambiguities of the middle ground between /s/ and /ʃ/ are crystallizing into one or the other of these two phonemes.

d) Now the child has to make decisions about those places where previously he used segments that were common to /s/ and /ʃ/ (or, it could be said, that were neither one phoneme nor the other, though still within the archiphoneme //S//). In deciding which of two forms to use mistakes are bound to be made, and forms such as /'fis/ "fish" /'bras/ "brush" as well as /'ʃikʃpents/ "sixpence" /'owʃɪz/ "horses" start to appear. It is now that we may speak of over-compensation or over-generalization. This is found not only with /s/ and /ʃ/, but most other pairs of phonemes that derive from an earlier

archiphoneme, such as /r/ and /w/, /f/ and /θ/, /tr/ and /tʃ/, and so on.

1 Development of Vowel Phonemes

In the case of //S//, as with most consonantal archiphonemes, we are concerned with only a two-way split. In vowel archiphonemes however these larger units may split in more complex ways. In the front half-open to open region it is possible that the archiphoneme //Æ// may develop the contrast /e̞/ - /a/ first, and then /æ/ emerges from the middle ground between these two. On the other hand the phoneme /e/ may develop first from the region between //I// and //Æ//, so that /i/ and /e/ are in contrast with a mass unit //A//, containing the embryonic /æ/ and /a/. Mature phoneme /e/ can develop from both //I// and //Æ// for some speakers, (though the latter archiphoneme is probably the most usual source of this vowel), so that it will be seen that these archiphonemes, although incorporating items which come to correspond with adult phonemes, do not have defined boundaries in the same way as mature phoneme boundaries (cf. Libermann 1961 for a discussion of this term). The boundaries of child archiphonemes may have areas of overlap in the very regions that will later represent contrastive phonemic units.

3. Development of Vowel Phonemes from 5 to 8 Years

3.1 Short Vowels

It was found in the discussion of Nursery speech that many of the short vowels could be said to be confused or to overlap in the phonemic systems of Nursery speakers. The pairs /i/ - /e/, /e/ - /æ/, /æ/ - /a/, /o/ - /u/ all overlapped in such a way that either member of a pair of short vowels might be found substituting in a word for the other member. /e/ might overlap with /i/ in some places and with /æ/ in others, while /æ/ might overlap with both /e/ and /a/. These areas of confusion we have explained as being relics of earlier mass archiphonemic units. As the short vowel phonemes emerge from the archiphonemes the overlapping of items does not disappear entirely, but it becomes much more regular and consistent as the terminal model is approached. Development after 5 years of age seems to govern the direction in which substitution of short vowels can take place. Whereas in Nursery speech a vowel such as /æ/ could be replaced by a more open form /a/ and by the closer item /e/, after the 5-year stage substitution is predominantly by closer vowels only. /i/ may replace /e/, /e/ may replace /æ/, /æ/ may (rather infrequently) replace /a/, /u/ may replace /o/, but the converse substitutions do not take place, and must be considered to be peculiar to Nursery speech. The vowel /a/

is not subject to substitution by closer forms to the same extent as some of the other short vowels, as we shall see in section iii below.

i /i/ and /e/

/i/ and /e/ are distinguished not only by degree of closure but also on distributional grounds, since /i/ may occur in open final syllables and /e/ may not. After 5 years of age open variants of /i/ are found occasionally in closed syllables within the utterance, where they can be regarded as /e/:

Shane: [ʰfɛʃ~ʰfɛʃ] /ʰfɛʃ-ʰfɛʃ+/ "Fish, fish."

David II: [ʰbɛkɪpɛb] /ʰbɛkɪrɛb/ "big crab"

but more and more such open variants are confined to final open syllables, where no contrast with /e/ is possible; these segments are to be regarded as allophones of /i/:

Dawn P: [ʰdɪdɛ] /ʰdɪdɪ+/ "Did he?"

Carol: [ʰɪfæ:nɛ] /ʰɪfæ:nɪ+/ "I found it."

Clifford: [ʰwɔʔʰsɛʊʰfɛnɛʰ] /ʰwɔʔʰsɛwʰfɛnɪ+/

"What's so funny?"

Closer versions of /e/, on the other hand, are found in positions where there is potential contrast with /i/, and this contrast being obscured they must be considered as cases of substitution by /i/. It may be that among older speakers

this substitution is confined to certain common words such as "get", "yesterday", while for younger children it may be observed more generally in grammatical and lexical items. On the other hand, it may be that the /i/-form of words that normally have /e/ is a dialectal variant, and for the reasons outlined above (1.4) these forms are to be found more often in the recordings of 5 and 6-year olds than in those of older informants:

- Nicholas: [əi'fɪl'äü,və] /ij'fil'əw,və+/ "he fell over."
 (5,7)
 Carl: ['wanə'ðeəm] /'wanə'ðijm/ "one of them"
 (5,10)
 Carol: ['jənA'fæ:nə] /'jinəj'fæ:ni+/ "Yes and I found it."
 (5,10)
 Stephen: [i²istə,dəi] /+'istə,dij/ "yesterday"
 (6,10)
 Terry: ['tʃä.nəgɪ?] /'tra:nəgit+/ "trying to get,"
 (7,7)

It is interesting to note the alternation of /i/ and /e/ in another word "just", which over this period has forms /dʒest/, /dʒist/ and /dʒest/, but not /dʒast/:

- Denise: [dʒ²ɛs'luk^hɪn] /dis'lukin+/ "just looking."
 Debra: [dʒ³estʌndə'tʃ³ɪ:nɪn] /dʒestondə'tʃə:nin+/ "just on the
 " : [dʒ³estə'k^xʌsɪə'və.ʊd] the turning."
 /'dʒestə'kɒsə'rəwd / "just across the road"

though /'dʒas(t)/ can be found in Nursery and 9-year old speech.

ii /e/ and /æ/

Not one instance of the substitution of /æ/ for /e/ is recorded in children of over 5 years, although this was a common feature of Nursery speech. /e/ in place of /æ/, on the other hand, persists throughout this period. As with the /i/-forms that replace /e/ in certain words (see above), 5-year olds substitute /e/ for /æ/ quite freely, and probably in words that might not take an /e/ in the terminal model. Older children, however, seem to confine /e/-forms to certain dialectal items, such as /'ketʃ/ "catch", /'tenə/ "tanner". Again, this may be due merely to the tendency of older speakers to reserve informal exponents to informal situations:

Carl: ['a:ftə'ʔε2] / 'a:ftə'ðet+ / "after that."
 (5,10)
 Steven II [mā: 'dεg, gəʊs] /maj'deg, gəʊs/ "My Dad goes..."
 (5,5)
 Paul Sn: ['bε2k^xfʋan²h] / 'bek-fwant+ / "back (to) front."
 Lindsey: ['k^xεtʃiz, ẽ.m] / 'ketʃiz, əm+ / "catches them,"
 (8,1)
 " : ['p^hʊ2ə'mε²tʃ] / 'putə'metʃ / "put a match"

iii /a/ in substituted forms

In Nursery speech /a/ may be replaced by a closer vowel, most commonly one in the region of /æ/, while the replacement of /æ/ by a more open vowel /a/ is also frequently observed. After the age of 5 years these alternations both persist for a time. At first the replacement of /æ/ by /a/ is as common,

if not commoner, than the reverse substitution. However more open forms of /æ/ become very rare after 7 years, only one or two instances being recorded after that age in this survey. Close variants of /a/, though not strikingly frequent at younger ages, continue to occur at all ages:

- Lorraine: ['avɪn, nɛ 'tʰeɪ] / 'avɪn, nɛ 'tɪj+ / "having their tea."
(5,0)
Kim: ['æʊlə 'rɪz] / 'asowlə 'rɪz / "That's all there is."
Janice: [antʰeɪ 'tʰɛɪndʒd] / antɪj 'tʰɛɪndʒd /
(6,8) "and he changed"
Tony S: ['bɪg 'mætʃɪz] / 'bɪg 'matʃɪz / "big matches"
(8,1)
Carl: ['dæʔwæn] / 'ðæt wæn / "that one"
(5,10)
Janice: ['pʰæmʔkɪn] / 'pæmpkin / "pumpkin"
(6,8)
Dawn P: ['ʃæ, læʔp] / 'ʃæ, læp+ / "Shut up,"
(7,4)
Terry: ['pʰæmʔjeɪ 'tʰaɪ] / 'pæmpjeɪ 'taɪ / "pump your tyre"
(7,7)

There is also a number of cases where /a/ is replaced by /o/. In some cases this may be due to a perceptual similarity between allophones of /a/ and unrounded allophones of /o/. This can be seen in the wide variety of starting-points in the vowel /aw/, which may start at points ranging from [a] to [ä] and [ɔ̃]. In the form /won/ "one" it may be that the /w/ has the effect of rounding the vowel:

- Kim: [,pʰʊʔ 'xʰɔ̃ʔpʰ] / ,put 'op+ / "put up."
(5,8)

Paul Sn: (5,3)	['guoŋk ^x oɔ]	/ 'gronkow /	"drunk all..."
"	: ['bos]	/ 'bos /	"bus"
Treacy P: (7,0)	['wom 'buäve]	/ 'wom 'brave /	"one brother"
Sean:m (5,11)	['ðætsdæ 'wom]	/ 'ðætsdæ 'wom /	"That's the one"
Shane: (5,4)	['wɔ̃nz ma˘]	/ 'wonzmaj- /	"One's my..."

This feature is not found among speakers over 7 years old.

iv /o/ and /u/

Among Nursery speakers it was noted that /o/ sometimes appeared in place of /u/ in words such as "look", "book". This alternation becomes rare after 5 years of age, although one example is found in a 5-year old speaker:

Shane: (5,4)	['bɔ?k ^x]	/ 'bok+ /	"Book."
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However, /u/ continues to occur for /o/ in certain common grammatical and lexical items:

Carol: (5,10)	[mädugz 'næim]	/ mæjdugz 'næjm+ /	"my dog's name."
Sean: (5,11)	[æni? 'wʊðən?]	/ ænit 'wuzənt /	"and it wasn't"
Paul H: (6,11)	[frum 'dɑ:nsɪn]	/ frum 'da:nsɪn /	"from dancing"
Terry: (7,7)	['guəʒɔ. 'næɪ]	/ 'guəʒo: 'næjm /	"What is your name?"

v Development of /ə/ as a Weak Form

The proportion of final syllables of polysyllabic words with stressed /ə/ - as in ['t^heiɪt,tʃə] / 'tiɪt,tʃə / "teacher" - seems

to decrease as the age of speaker increases. This is not so much because it is a 'childish' or 'Nursery' feature of speech, in the way that a lisped /s/ is, for example, but because it is largely an emphatic device, associated with slow, deliberate speech. Although slow deliberate speech is found at all age, among adults as well as among children, it seems to be more typical on the whole of young children's speech. As Miller and Ervin (1964) point out, adults use a special, highly conventionalized type of language to children (see II, 1.2 iii), and from an adult speaking slowly and deliberately a child will probably learn features of this type of speech more readily than those of rapid, conversational adult discourse. Also, fully and carefully articulated syllables represent something nearer to a child's phonological competence than the rapid, sometimes elided, slurred and coalesced forms that characterize older types of speech. This is not the place to embark on a detailed discussion of the rhythm of children's speech, but a rough outline of the development of rhythmic features may distinguish several significant stages in the changing status of stressed and unstressed syllables, and of strong and weak vowel forms.

a) In the earliest stages of language children have a 'syllable-based' rather than a 'foot-based' rhythm. As the child speaks he enunciates each syllable as he comes to it,

giving each one an uncontrasted if not equal stress. At this stage he is probably not capable of dealing with larger phonological units than the single syllable. Even the youngest child in this survey has progressed beyond such a developmental state, though some examples of syllable-based rhythm can be found:

Trevor: [ˈʌŋ, gɔʔ ˈtʃəʊ ˈbɪg ˈbɔʊz] /ˈʌŋ ˈgɔt ˈtuw ˈbɪg ˈbɔwz+ /
(3,7)

"I've got two big balls."

Denise: [ˈdɜʊz ˈlɪʔ, ɔ. ˈwʌŋs] /ˈdɜwz ˈlɪt ˈɔw ˈwʌns+ /
(3,11)

"those little ones."

Here each syllable is marked in the phonemic transcription with primary stress because there is no contrast in the degree of prominence given by the speaker to each syllable.

It is probably exceptional for utterances as long as these to be produced with uncontrasted stress.

b) A second stage of development sees the differentiation of two degrees of stress, primary and non-primary. These do not correspond to stressed and unstressed syllables, for many non-primary syllables may have as much force and intensity in their articulation as primary ones. The distribution of primary stress, however, governs the division of an utterance into units corresponding roughly to words; one word may have no more than one primary stress. Now some words may

have a non-primary-stressed syllable that is weakly stressed or 'unstressed' - thus: ['ævənʔ] /'ævənt/ "haven't"; ['p
 ['pʰɔwɪdʒ] /'powɪdʒ/ "porridge". Others may have two strongly stressed syllables, one of which is primary, the other non-primary: ['ʔsu, ɣɪz] "horses"; ['wɔoʔ, ǣ:] "water". At this time however there is no real contrast of unstressed and secondary stressed syllables, of weak and non-primary strong stress. As long as the rhythm of a child's speech is based on the syllable and the disyllable, rather than on the foot, there may be no contrast of length between primary and non-primary syllables. The 'unstressed' syllables in:

Fern: ['ɕɪɪ, da, zənʔ 'lǎ: ʔkɪm 'ĕnɪ 'mɔɐ]
 /'ʃɪj, da, zənt 'lajk-him 'eni 'mo: +/
 "She doesn't like him any more."

are more prominent than the unstressed syllables in a 9-year old's utterance, and though not as prominent as the primary stressed syllables in the same utterance, are still relatively long and unreduced, and cannot properly be called 'weak'. While there are no truly 'weak' or unstressed syllables in the child's speech it is probable that there are no rules for producing the weak forms of vowels from the unweakened phonemes. Syllables with *u/ə/* are learnt item by item from the model language, and unweakened forms occur in the child's

speech in places where older speech would use the weak vowel /ə/:

Fern: ['tʃʊi.ɔv'æp,pʰɔz] / 'triʃov'æp,powz /
 "tree of apples."

Peter: [,wɛnʔ,tu.də'seɪ] / ,went,tuɔdə'siʃ+ /
 "went to the sea."

Mark: ['ma:m,mæ'læɪd] / 'ma:m,ma'læjd / "marmalade"

Lynn: [bə'ləʊnə,kʰɛŋ'gɛlɔn] / bə'luwns,keŋ'gelon /
 "balloons can get on"

instead of / 'triʃɔv... /, / ,wenttə... /, / 'ma:mə'læjd /,
 / bə'luwnskeŋ... /. The child is in each of these cases
 reproducing a word in the form in which it is stored in his
 or her phonological competence, without applying the
 phonological transformation which in older children results
 in a weak vowel in an unstressed syllable. It is to be
 expected, then, that /ə/ should have a more limited distri-
 bution and lighter functional load among children at this
 stage. Some of the younger children in the Nursery group
 are at this point of development.

c) As the tempo of speech increases, and as the child gains
 in mastery of larger phonetic units than the syllable or
 disyllable, so a contrast of both length and intensity or
 prominence begins to operate, producing syllables that are

closer in terms of stress and rhythm to the mature stressed and unstressed syllable. We may begin to talk also of non-prominent syllables, which probably occur at first within an utterance, while final syllables may have only primary or secondary stress. Later, secondary stress on a syllable before /+/ is associated mainly with emphatic or deliberate speech. As the child begins to use unstressed and stressed syllables in conformity with the model language, so does he start to acquire the rules of phonological weakening. Most vowels in Cockney can be reduced to /ə/ in an unstressed syllable, but some vowels are more commonly weakened to /ɪ/ or /ʊ/, and it is also possible for most vowels to occur in unstressed syllables in a weakened, though not entirely non-distinctive form. Some children may pass through a phase when they use /ɪ/, /ʊ/ and even in some cases other short vowels such as /e/, /o/, in unstressed syllables in place of /ə/. This seems to indicate that they are in the process of acquiring the rules of phonological weakening, even though they are not quite clear which vowels are to be reduced to which weak forms. Not only Nursery children but also some 5-year olds are at this stage:

Carl: [ɛm'wanz] /ɪm'wanz/ "them ones"
 (5,10)
 Nicholas: ['nɪkʰɛ,ləs] /'nɪkɪ,ləs/ "Nicholas."
 (5,7)
 Paul Sn: ['tʰæ:'lændɪn] /'tæ:'lændɪn/ "Tower of London"
 (5,3)

Nicholas: [bæ:ʔ? 'nan, dʒüdʔ] /bæ:te'nan, drudʔ/

"about an hundred."

Margaret: [p^həʔs. 'leʔuz] /'pəws-'letuz/ "post letters"

Mark: [jɛ: buʔ] /'je:but/ "Yeah, but...."

Margaret: [dɛ'neʔv] /de'nəw+/ "Don't know."

Kim: [ə'sooʔəvɛ'k^hamʔp^h] /ə'sowtəve'kamp+/

"a sort of a camp."

Mark: ['medison'væniʔ] /'medison'rænit+/

"medicine, ainit"

Kim: [wɔʔʃɪdə'pɪa.s:te] /'wotʃonðə'pla:sste/

"washing the plaster"

This is a very different phenomenon from the one noted above in b) , where short vowels are given full phonetic value in unstressed or stressed syllables. In the former case, at an earlier stage of development, the child has the same form of a word in both primary-stressed and non-primary-stressed positions. In the latter case a word has two forms, a strong form and a weak form differing from the strong form in a way that has not been copied from older models, but is rather originated by the speaker on the basis of his having noticed that certain vowels appear regularly in unstressed syllables.

d) In early stages some words that have /ə/ in stressed syllables appear to be forms that are learnt directly from older models. Expressions such as "doesn't", "going to" may have alternative forms, one with /ə/, one with another vowel: or the /ə/-form may be the only one that a child uses:

Debbi: [ˈgənəˈməʊv] /ˈgənəˈmuʊv/ "going to move"

Lynn: [ˈdɛzənəɪ] /ˈdɛzənɪj/ "doesn't he?"

Tracy: [ˈɛnəɪ] /ˈɛnɪj+ / "ain't he?"

At a rather later stage a rule may be extrapolated from these forms, such that most vowels in stressed position may be replaced by /ə/ in certain conditions. This seems to be a stylistic feature associated with rapid though not necessarily informal or dialectal styles of speech, and is found at all ages after 5 years of age:

Lorraine: [ˈdɛwuzˈɪ.vd̥^s] /ˈdɛwuzˈawd+/ "He was old."
(5,0)

Robby: [ˈkʰɛzˌɔːdɛɪˈlɑːɪkʰɛ?] /ˈkɛzɔːdɛsˈlɔːkɛt+/ ^k
(7,0)

"Cause I just like it."

Debra G: [ˈɛwɛzə?] /ˈɛwɛzət/ "I was at..."
(8,0)

Terry: [ˈsɛməsˈnɪ.ə, dʒo] /ˈsɛməsˈnɪj, dʒoʊ/
(7,7)

"(the) same as Nigel."

vi /o/ as a weak form

It has been seen that only /i/, /u/ and /ə/ are truly weak vowels in the mature model (III,4.2). In other words, it is to one of these three segments that other vowels may be ultimately reduced either by loss of prominence or by a phonological transformation producing the weak form. In section v above it was also observed that /o/ may for some Nursery or slightly older speakers have the function of a weak vowel. This may be the reason for the existence of some forms such as /gonə/ "going to" in early speech, by the side of /gunə/ and /gənə/ which persist into older speech, and of /o'rajt/ by the side of /ow'rajt/, /u'rajt/, forms which replace the /o/ - form. It may be that mature speakers occasionally give precedents for the use of /o/ in certain common expressions, for example in /bi'koz/, but in this study forms with /o/ are recorded mainly in the speech of children of less than 7 years:

Fern:	[¹ fɪ:z,gonə]	/ ¹ fɪjz,gonə/	"She's going to..."
(3,8)			
Paul Sn:	[¹ gɔə'gɛ2]	/ ¹ gonə'get/	"going to get..."
(5,3)			
Debby:	[ɔ'vʌɪtðɪn]	/o'rajtðɪn/	"All right then,"
(4,6)			
Tracy P:	[ɔ'vʌɪtðɛ.~]	/+o'rajtðe+/	"All right then,"
(7,0)			

3.2 Long Vowels

1 Short and Long Vocoids

It has been observed with some long vowels - /i:/, /e:/, /æ:/, /ə:/, /o:/ - that the distinctive feature of length is often lost, this resulting in either a short allophone of a long vowel, or a weakening of the vowel to its corresponding short vowel phoneme. The proportions of short to long vocoids in these vowels do not alter dramatically with age. They may be presented in tabular form. 'Long' realizations of the vowel includes long vocoids, glides to centre and two-directional glides or triphthongs such as [ɪjə], [ɛjə], [ɔwə]:

Vowel		Nur- sery	5-plus	6-plus	7-plus	9 years	Total
/i:/	short	2	7	5	2	6	22
	long	12	13	12	11	20	68
/e:/	short	20	20	10	28	19	97
	long	22	14	20	14	36	106
/æ:/	short	11	10	14	13	17	65
	long	74	64	49	55	108	350
/ə:/	short	3	2	10	11	17	43
	long	10	25	32	19	49	135
/o:/	short	5	5	7	11	7	35
	long	12	17	15	13	21	78

It will be apparent from this table that the greatest number of short vocoids are found for the vowel /e:/. Short and long vocoids are overall in the proportion of almost 1 : 1. The ratio for /o:/ is approximately 1 : 2, for /i:/ and /æ:/ roughly 1 : 3, and for /e:/ almost 1 : 6.

ii Two-directional Glides

Many of the long vowels are characterized in strongly dialectal speech by triphthongal glides from their normal starting-points to a closer position and thence to central or front of central, between half-open and open. Very often the middle-point of these triphthongs is non-prominent in relation to the end and the beginning, and there is a rapid movement away from the close tongue-position associated with it, such that a contoidal semivowel [j] or [w] is produced. Thus [ɪjə] for /i:/, [ɛjə] for /e:/, [æjə] for /æ:/, [ɔwə] for /o:/. These glides are found in both open and closed syllables, but always before /+/. In this study nearly every instance of these glides is found in the recorded speech of a child in the 5-year old group, with a few cases among Nursery children and 6-year olds. Both boys and girls use these forms:

Nicholas: [ɪʊv'vɪjə^h] /,əwv'ri:+/ "over here."
5,7)

Lorraine: [ˈlɪvz̥ˈa²pstɛjəz̥] /ˈlɪvz̥ˈapste:z+/ "lives upstairs."
 (5,0)
 Nicholas: [ˈseɪjæ²ˈðɛjə] /ˈsɪjjætˈðe:z+/ "See that there?"
 Carl: [ˌkɪəɪnɪ²ˈæjə²] /ˌklɪjnitˈæ:t+/ "clean it out."
 (5,10)
 Carol: [ˈfl̥ɔ.ʊ̯əz̥] /ˈflo:z+/ "floors."
 (5,10)
 Kathleen: [ˈfɔwə] /ˈfo:z+/ "four."
 (6,6)

In one place a similar two-directional glide is found in /æ/, a further indication of the length of this vowel, unique among the short vowels:

Dawn E: [ˈfanəiˈmæiəŋθ] /ˈfanijˈmæns+/ "funny mans,"
 (6,6)

iii /ə:/ and /e:/

Some girls appear to pass through a stage where these two vowels are confused in speech, though only two or three speakers are subject to this confusion, and it may be that this is an idiolectal feature. When a long front of central vocoid similar to that usually found for /ə:/, but without any significant amount of rounding, occurs, it is homophonous with a centralized allophone of /e:/. Though in most cases cues of context clear up any confusion inherent in this homophony, there are places where a real ambiguity may arise:

Janice: [ˈfaɪwɛɪ²ks] /ˈfaɪ,wɛ:ks+/ "fireworks"
 (6,8)

- Janice: ['dʒ aːstwið, ðe:] / 'da:ntstwið, e: + / "danced with her."
 ['ðe: wəzə 'lavli] / 'ðe: wəzə 'lavli j /
 "There was a lovely..."
- Lindsey: ['tʰæz 'e: 'bægʰ] / 'tə:nz 'e: 'bæg + / "turns her(their?)
 (8,1) back."
- Jill: ['geʔsɛ 'ʃɔ:pʰɪn] / 'getse 'ʃopin + / "gets her (their?)
 (7,9) shopping."

iv /a: /

Fully back allophones of this long vowel, with or without lip-rounding, are probably associated with informal styles of speech for older speakers (cf. III, 4.3xviii). We may therefore expect to find such allophones in the speech of 5 and 6-year olds even in the relatively formal situation of an 'interview' with an adult, since at these ages the child is less sensitive to formality. [ɒ:] or [ɑ:] is probably not such an obvious dialectal form as for example the triphthongal glides noted above, and this type of allophone is found at all ages, though the older the speaker, the more likely it is that it will be recorded mainly in informal contexts:

- Nicholas [ə'ga:d] /ə'ga:d/ "a guard"
 (5,7)
- Shane: ['kæptʰɪn 'skɑ:lɪ?] / 'kæptɪn 'ska:lɪt /
 (5,4) "Captain Scarlett"
- Stephen: ['pʰä:z, əɪ] / 'pa:t, i j + / "party."
 (6,10)
- Robby: ['kʰɑ: 'vafɛ] / 'ka: 'ra:fə / "Car Hire firm (sic)."
 (7,0)

3.3 Fronting Vowels

i /iɪ/

The only real divergences between Nursery and 9-year old usage of this item are in its more open-starting allophones, leading sometimes to overlap of /iɪ/ and /æɪ/, and certain peculiarities of distribution. The phonetic peculiarities of Nursery allophones are not found in the speech of the 5-year old informants or in older speakers in this study. However, distributional characteristics of Nursery speech continue for some time in the 5 to 8 year period. Younger speakers tend to use the phoneme in place of other vowels, and particularly to substitute it for /ɪ/ in contexts which have no precedent in older models. Examples of such misplacement become less frequent as the age of the speaker increases:

Kim: (5,8)	[ˈiiniwæɪ]	/ˈiɪjniwæɪ/	"anyway."
Carl: (5,10)	[ˈwænəˈðeɪm]	/ˈwænəˈðɪɪm/	"one of them"
Dawn E: (6,6)	[mæˈsiɪstʰæ]	/mæˈsiɪs-tə+/	"my sister."

ii /æɪ/

In the younger groups of children there is for some speakers an apparent lack of contrast between the forms /ðe:/ "they're" and /ðæɪ/ "they". This is seen in an exchange between Fern and Paula - Fern: /dezeˈgewstin,ne:+/ "There's a ghost in

there". Paula: /,dæj'æjnt+/ "There ain't!". Forms with /e:/, /e/ or /æj/ may appear before both inflected verbs and participial items:

- Fern: [dɛ'gəɪntʰə'ɔlədæɪʃ] /de'gəwintə-'ɔlədæj+/
 enise "They're going to holiday."
 Denise: [dæɪ'gəɪntʰə'wɔlədæɪ] /dæɪ'gəwintə'wɔlədæj+/ (3,11)
 "They going to holiday."
 Lorraine: [,bʊʔdɛ:'daʊɪd] /,butde:'daɪd+/ "but they(re)died." (5,0)
 Dawn E: [dɛ'pɪæ.ɪd] /de'plæɪd/ "They(re)played..." (6,6)
 " : [dɛ'væɪnɪ'nɪʔ'gʰou] /de'ræɪni'nik'gow /
 "They('re) ain't in this school."

The form "they've" in Cockney is generally expressed as /ðev/, /ev/ or simply /e/:

- Carl: [ɛv'gɔɪ] /ev'gotɪ/ "They've got it..
 Stephan: [ɛ'gɔʔdɛ'ba.ɪ,kʰæ.ʔ] /e'gotðe'baɪ,kæ:t/
 "They've got their bike out."
 Debra G: [ðɛv'gɔʔə,kʰæf] /ðev'gotə,kæf/ "They've got a cafe"

iii /aɪ/

a) Triphthongal Glides

A two-directional glide is found in this vowel. This takes the form of a progression from back open, without rounding, to a back half-close to close position, with ~~lipwɪə~~rounding, and

thence to front half-close. The beginning and the end of the glide are associated with spread lips, and if tongue and lip movement in the middle of the glide are sufficiently rapid an inter-vocalic contoid [w] or [ʷ] may be produced. This glide, like the triphthongs in /i:/, /e:/, /o:/ and so on, is recorded almost exclusively in the speech of 5 to 6-year old children:

Lorraine: ['ɛn:æɪ'nɑʊɪt] /'ɛnnæj'najt+/ "Ain't they nice?"
 (5,0)
 Carol: [ɪɪ'dɑʊɪd] /ɪt'dajd+/ "it died."
 (5,10)
 Kim: [ə'fanɪi'kʰɑwɪnd] /ə'fanɪj'kajnd+/ "a funny kind."
 (5,8)

Rounded starting-points of this vowel are probably a feature of strongly dialectal speech. Occurrences of this type of allophone - [ɪɪ], [ɑɪ] - are found predominantly in the 5 to 6 year old group of speakers, as the following table shows:

Rounded Allophones of /aj/

	Nursery	5-plus	6-plus	7-plus	9 years	Total
Boys	-	6	2	-	1	9
Girls	1	2	-	-	-	3

These vocoids are mostly the work of Paul Sheekey and Paul Snellin (5,3) and Stephen Glynn at 6,10. The girl in the 5-plus group is Kim Chandler (5,8). This table shows quite effectively how dialectal forms tend to appear at around 5

years, then subsequently to disappear from recorded speech.

b) "My", "I"

An interesting progression takes place in the forms of the word "my" over this period. For the youngest speakers the unweakened form [maɪ] is the most frequently occurring, though [mä.], the weakened form, is also found. However, at the Nursery stage the weak forms /mi/ or /mij/ are relatively rare. These weak forms become more frequent over the years, and there is an equally marked decrease in the frequency of the unweakened [maɪ]. This realization is in fact not recorded at all at the 5-year stage, when the dialectal styles of speech are at their most evident in this study. In the table below figures are based on only stressed occurrences of "I", but on both stressed and unstressed "my". There is no weak form of "I" in consistent use in Cockney, but the development of this item sees a marked decrease in frequency of the unweakened [aɪ], which is generally replaced by the weakened ['ü:] from the 5-year stage onward.

Ratio of Glided and Monophthongal Vowels in "My" and "I"

	Nursery	5-plus	6-plus	7-plus	9 years	Total
[maɪ]	15 15	-	5	6	5	31
[mä.]	8 8	20	16	12	31	87
/mi/, /mij/	4	4	7	4	16	35

Glided and Monophthongal Vocoids in Stressed "I"

	Nursery	5-plus	6-plus	7-plus	9 years	Total
['ɑ:]	33	37	24	19	24	137
['aɪ]	19	3	4	2	5	33

From the figures for "my" it would appear that the phonological transformation producing the weak forms /mi/, /mij/ is not brought widely into use until a relatively late stage of development. It is perhaps surprising that forms which are popularly supposed to be typical of Cockney should not be as frequent at the 5-year old level as other dialectal features, and do not become noticeably frequent until the 9-year level. It is to be remembered of course that these weak forms are found only in unstressed syllables and are therefore relatively unprominent.

iv /ɔj/

No dramatic developments take place in this vowel after five years of age. Among younger children there are some instances of more open variants overlapping with /aj/. These can be considered as persisting Nursery forms deriving from the original archiphoneme //AJ//, a glide from back open to front close or half-close. Among older speakers are found closer starting-points, and there is perhaps ~~more~~ rounding of the f

first element - though unrounded glides are still found:

Shane:	[^h tʰə̃z]	/tɔjz+/	"toys."
(5,4)			
Kim:	[,tʰaɪ'θɪŋs]	/,taɪ'θɪŋs+/	"toy things."
(5,8)			
Lorraine:	[^h bɔ̃nə'gɛɹ]	/bajnə'gel+/	"boy and a girl."
(5,0)			
Julia:	[^h ɛbAɪ'tʰə̃z]	/aɪbaj'tɔjs+/	"I buy toys,"
(7,9)			
Clifford:	[,ɪs'bɔɪ̃s]	/,ɪs'boɪs/	"This boy's..."
(8,1)			
Lindsey:	[lɪ'ʌɪsə'nɔɪz]	/lɔtsə'noɪz/	"lots of noise"
(8,1)			

3.4 Retracting Vowels

1 Readjustment of the System

As speech develops from the Nursery stage there is some re-adjustment in the phonological structure to fit in the late-acquired phoneme /aw/ among the other three glides to back close, /ew/, /uw/ and /ow/. The starting-point of /aw/ is in the half-open to open region, and its rounding glide travels towards back half-close. As speech progresses through this period under consideration the centre or locus round which starting-points of /ew/ cluster becomes more precisely determined at a point between half-open and open and front of central - [ɐ̃]. The open central or back of central points that were found in Nursery speech, such as [^hɛ̃], [A], become less frequent, to avoid starting-points of /aw/ such as [Ä], [ö̃], [A], [a]. Similarly the starting-point of /ow/, or

the locus of its starting-points, becomes closer, to avoid glides of /aw/ which start at [ɤ], [ʌ]. As the starting-point of /ow/ is raised, so is its end-point, which occupies the area at back half-close and above, although more open glides are still found in utterance-final syllables, as at 9 years (cf. III, 4.3xxv). Those diphthongs in /uw/ which finished very near to back close in Nursery speech are discouraged by the presence of /ow/ in the near vicinity, so that /uw/ tends to be realized more and more as a glide to back or to front of central close, or as a monophthong in this area. Just as the open allophones of /ow/-[ɔɔ], [ʌo] - are confined to utterance-final position, so do those open-starting allophones of /uw/ become restricted to utterance-final and prominent syllables - [ʊü], [ʊə]. Other aspects of the development of this series of vowels are mainly concerned with distribution features.

ii /əw/

It is interesting to see the development in the final vowel of such words as "potato", "yellow", "window". These words seem to be learnt by the young child initially in a form which ends in /əw/:

Andrew:	['smæʃpʰə'dæɪʔ, əwɜ]	/ 'smæʃ-pə'tæjt, əws+ /
(4,0)		"smashed potatoes."
Margaret:	['wɪn, dəw]	/ 'wɪn, dəw+ / "Window."
(4,8)		

Peter: ['le,ləw] /'le,ləw+/ "Yellow."
(3,6)

Later, a rule is applied which transforms the final /əw/ into the weak form /ə/, and this may be over-generalized to include cases, like "photo", which are not normally so weakened in mature speech:

David II: [tʃaʔtʰəmədʰə'win,dʰə] /tʃattəmədʰə'win,də+/ "chucked them out of the window."
(5,7)

Tony S: ['jeləvəm'blæʔ] /'jelərəm'blæk/ "yellow and black."
(8,1)

David G1: [tʰsəɪʔəz] /tʰəjtez/ "potatoes,"

Paul Sh: [æbmʰə'fəʔə,tʰuk'en] /æbməj'fəwte,tukən/ "Had my photo taken."
(5,3)

Glides to Front Half-close

Throughout this study, glides in /əw/ to front half-close or closer, as in [eʊ], [ɤ̥], are found exclusively in the speech of girls:

Tracy P: [tʰaɪ'dəʔnʔ'nəʊ] /+tʰaɪ'dəwnt'nəw/ "I don't know,"
(7,0)

Kathleen M: [nə'hə̥] /nəw+/ "No."
(6,6)

Debra G: [mə̥,bʰaɪl,hə̥w] /məw,bʰaɪl,həw+/ "Mobile Home."
(8,0)

Jill: [də'næ:ʊ] /də'nəw+/ "Don't know."
(7,9)

111 /ow/

Those open starting-points of /ow/ that were found in Nursery speech become relatively rare after the age of 5 or 6 years, except in final open syllables:

Kim:	[ə'bo,t ^s ɔo]	/ə'bo,tow+/	"a bottle."
Tracy:	['mɪθ 'mɪʔtʃɔo]	/ 'mis 'mɪ ^t tʃow+/	"Miss Mitchell"
Paul H:	[ɪn.ə'boʔɔo]	/ɪnðə'botow+/	"in the bottle."

though a more open starting-point may be produced by assimilation to /aw/:

Debra (7,5)	[vəɪd'ɹɔɪɹ, buʔk ^x]	/rɪjd'awðɪaw,buk+/	"read all the whole book."
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/ow/ may appear in closed syllables in certain dialectal forms such as /'gown/ "gone", /owf/ "off". These items, which occur only rarely in this study, are recorded only among 5 and 6-year old speakers, indicating that although not regularly heard from older children they are probably within the competence of most of these speakers, but are perhaps reserved for informal occasions, such as home or the peer-group:

Lorraine (5,0)	[,ʔsəo'gəon]	/+,sow'gown+/	"It's all gone."
Kathleen (6,6)	['wenən, gəonən]	/ 'wenən, gownən/	"went and gone and..."
Stephen (6,10)	['sɛʔəm'öuf]	/ 'setəm'owf+/	" set them off."

iv /aw/

This vowel has a variety of starting-points throughout the 5 to 8-year old period. However most children show that they have the contrast of /əw/ and /aw/ well-established. In the test of speech-sound discrimination described in Chapter VI, for instance, the word-pair BOW - BOWL was not found to give a significant amount of difficulty to listeners (see VI, 32). The /ow/ - /aw/ contrast is similarly maintained by all speakers above the age of 5 years. There is no case of /ow/ appearing for mature /aw/, or vice versa. There are however some neutralizations of the contrast of /aw/ with other sequences of Vowel + /l/. /al/ in "bulb" and /ɑjl/ or /ɑ:l/ in "crocodile" both occur with vocoid glides starting from points within the rather wide region that covers the starting-points of /aw/:

Nicholas: [i'p^hʊə'bʌb] /jɪ'putə'bawb+/ "You put a bulb."

Paul Sn: [nəʊ'kwɒk^xə,dʌɔs] /nəw'kwokə,daws+/

"no crocodiles."

Paula: [,lʊʔ'k^xəkə,dəɔ] / ,luk'kwokə,daw+/ "Look, crocodile
(4,3)

These vocoids then may be regarded as cases of substitution by /aw/, and indicate once again the vocalic nature of Vowel + /l/ sequences.

4. Consonants

4.1 Plosives

1 Glottal Allophones of Plosives

A count was made of the number of times final /p,t,k/ had the glottal allophone [ʔ] and the number of times they had bilabial, alveolar and velar articulation respectively. The count was based on 10 consecutive utterances of each speaker, at each of five age-levels.

	Nursery		5-plus	6-plus	7-plus	9 years	Total
/p/ [ʔ]	7	4	2	5	2	20	
[ʔp ^h] etc.	8	3	4	6	5	26	
/t/ [ʔ]	62	40	34	34	60	230	
[ʔt ^s] etc.	1	2	1	2	3	9	
/k/ [ʔ]	17	9	11	9	8	54	
[ʔk ^x] etc.	14	10	16	6	12	58	

It will be seen from these figures that glottalization of fortis plosives does not alter radically with age of speaker, that /t/ has the allophone [ʔ] far more often than /p/ or /k/, which are realized by the glottal stop in almost equal proportions.

ii Bilabial Plosives /p/, /b/

The only feature of these consonants that 9-year old speech displays but Nursery speech does not, is the use of pre-glottalized lenis segments in medial position for /p/. The segments may be bilabial plosives or continuants. These are first recorded in speakers around the age of 6 years:

Sean: ['əʊʔβənə'dɔ̥] / 'əʊpənə'do: + / "open the door."
 (5,11)
 Stephen: ['ʂtæɪʔaʔb,ənt^sə] / 'stræjtap,əntə /
 (6,10)
 " straight up on to..."

Ejective plosives for /p/ are recorded, not only in utterance-final position:

Dawn E: ['kɪɪ.ɹɪn'ap'] / 'kli:rin'ap + / "clearing up."
 (6,6)
 Lorraine: [,p'ɪk^xɪʔ'ɔəf] / ,pikit'of + / "Pick it off."
 (5,0)

A smiling articulation produces labio-dental articulations [ɸ], [ɸ]:

Steven II [['ba. 'ba. 'bɫæʔ'ʃeɪ²β^f] / 'ba: 'ba: 'blæk'ʃɪjp + /
 (5,5)
 "Baa baa black sheep,"
 " ['fɪeɪ 'bægʒ'föy] / 'frij 'bægʒ'fow + / "Three bags full."
 Jill: [ʔA 'bə: nʔm^ʔɪ^ʔβɛɪf] / +aɪ 'bə: ntmaɪ, velf + /
 (7,9)
 "I burnt myself."

These segments may also be found in a labio-dental context:

Dawn E: ['ʃʊʃʊ,βaʔs] / 'gugu, pats + / "Sugar puffs."
 where /p/ may be thought of as having taken on the labio-

dental feature of the 'missing' /f/.

Sean: ['mɪdæb'fəʊ] / 'mɑːjdæb'fəʊ / "My Dad thought..."

iii Alveolo-palatal Plosives [tʃ] , [dʒ]

These segments were described in III,5.3_{iv,v}, where it was remarked that they appear to have features of both /t/, /d/ and of /k/, /g/. They are not found in Nursery speech, even among speakers such as Peter who confuse alveolar and velar plosive phonemes. They begin to appear in this survey in the speech of 5-year olds, where they may be allophones of either alveolars or velars:

Paul Sn: [ʔɪtʰən'daɪ-y] /+ʔikən'dajv+/ "He can dive,"
(5,3)
[ʔgɛʔə'nəu,tʰɛlɛʃ] /'gote'nuw,telɪj+ /
"Got a new telly."

Lorraine: ['dʒɪʔɪnə'tʃʊ̃ ʔɛn] /'ɡɪtɪnə'træɪn/ "get in a train"
(5.0)

Dawn E
(6.6) ['kæɪəʔ 'q̣ym] / 'tæjət 'əwm+ / stay at home.

Kathleen: ['spA:kleɪs] /'spɑ:kkləs/ "sparklers"

In one utterance of Paul Sh (5,3) /t/ and /k/ seem to be conflated into the one segment [t̟], with features of both:

[^hka:] (cf. also [k_ɪ't^hu:] by the same speaker) / (kə)'ta: +/
"guitar".

In the case of Dawn Edmeade (6,6), a twin whose speech is in many ways deviant from the speech of her 6-year old peer-

group, but who is not 'retarded' in the sense that her speech cannot be compared with the early stages of Nursery speech, there is often a lack of contrast between /t/ and /k/ and between /d/ and /g/, caused by the use of alveolo-palatal plosives.

[ɪn'ɪʔ,ʔið:s]	/ɪn'ik,kla:s+/ "in this class."
['wɛnʔʔ'ɛlɛʔ'fɛjə]	/'wenttɛlɛt'fe:+/ "went to the fair."
[wɛi'dʒəu.....wɪ'gəʔn]	/wɪj'd(g)uw.....wɪ'gəwn+/
"(Sometimes) we do (but sometimes) we don't."	
['ɛvrɪʔ'ʒæɪ]	/'evrit'dæj/ "every day"
[ændʒ']	/ænd+/ "and,"
[ə'ʃɑ:ʔ']	/ə'ʃɑ:k+/ "a shark."

It could be suggested that Dawn is at a stage in the development of her plosive system where an archiphonemes //D//, //T// are breaking down into their component parts /d/ and /g/, /t/ and /k/, with a middle ground between the occasionally contrastive alveolars and velars, occupied by these alveolo-palatal segments. Dawn's speech is characterized by a number of non-standard features, such as a high proportion of ejective plosives, the termination of open syllables with [ʔ] as in /evrit'dæj/, /tɛlɛt'fe:/ above, and a great amount of variation in her realization of the fricatives /s/, /z/ (see 4.2 vi below). It is greatly to be regretted that her

twin sister was not available at the time of the recordings, so that some idea could have been reached of the extent to which these features are purely idiolectal, and how far they are consistent with a relatively structured twin's idioglossia. Such an investigation could be the basis for an entire^{new}/study.

iv The Voiced Alveolar Flap [ɾ]

The alveolar flap [ɾ] has been found as an allophone of initial /ð/ and of medial /t/ in both 9-year old speech and Nursery speech, where it was also recorded for medial /d/. The segment never has a very widespread occurrence, but it is interesting to note in the table below that it has its highest frequency at the 5-year level, the period when most dialectal features of Cockney make their appearance in children's speech:

Occurrences of [ɾ] as Allophone of Initial /ð/ and of Medial /t/ and /d/ Among Boy and Girl Speakers

<u>Initial /ð/</u>	Nursery	5-plus	6-plus	7-plus	9 years	Total
Boys	8	17	7	7	12	51
Girls	1	5	3	-	-	9
<u>Medial /t/./d/</u>						
Boys	4	1	-	-	3	8
Girls	3	1	1	1	-	6

As regards medial /t/ and /d/ there is no substantial difference between the sexes in the use of this segment: three instances in boys' speech at 9 years are not really enough to be considered significant. As an allophone of initial /ð/ however it is clear that the voiced alveolar flap is used by boys much more than girls. The high frequency of this segment at 5 years suggests that this is felt to be a feature of relatively informal, dialectal styles of speech.

4.2 Fricatives

1.1 Labio-dental Fricatives /f/, /v/

Variants of /f/ and /v/ with protruded lower lip - [ɸ], [β] - are occasionally found as allophones of the fricatives in contexts with no connotation of /r/:

Carl: [ˈkʰʌːˈdeɪɸæf] /ˈka:lˈdɪjæf+/ "Carl De'ath."

Kathleen M [wɪβənˈeːdræjə] /wɪvənˈeːdræjə+/ "with an hair-drier."

A noisy or 'spluttered' fricative may be the result of a speaker's articulating through laughter - [ɸ]

Paul Sn: [ˈɸanɪˈfɪŋgəs] /ˈfanijˈfɪŋgəs/ "funny fingers."

As the phoneme /θ/ develops from the archiphonemic //F//, so there may be cases of over-compensation which produce /θ/ in

place of /f/. Similarly /ð/ may be found substituting for /v/:

Paul Sn: [ˈflaənˈfθɪʃ] /ˈflaɪənˈθɪs+/ "flying fish."
 [daɪðəːfdəˈsekˈhəmˈboʊd] /ˈdaɪðo(ow)fdəˈsekəm
 ˈboʊd+/

"dived off the second board."

Sean: [ˈʔæðθəɪnəˈtʃæɪn] /+ˈaɪðsɪjnəˈtræɪn/
 "I've seen a train..."

iii Clusters /fr/, /fw/, /vr/, /vw/

There is not a great deal of difference in perceptual or articulatory terms between /f/, /v/ and the monosegmental realizations of /fr/ and /vr/ - [β], [ʋ], [ɸ], [ɹ]. In many utterances there is no way of telling whether the single phoneme or the cluster is intended, so that contextual cues have to be relied on:

Paul H: [fʊmˈdɑːntsɪn] /frumˈdaːntsɪn/ "from dancing"

Steven: [ˈdʒɔːnəˈfən] /ˈdʒoːnəˈfən+/ "Jonathan."

Debra C: [ˌɹəʊˈfɹuːt] /+ˌowˈfruw+/ "all fruit."

Tracy P: [ˈɹɛvɹɪwənz] /+ˈevriwənz/ "Everyone's..."

Steven: [ˈθriːˌbægzˈfʊl] /ˈfriːjˌbægzˈfow+/

"Three bags full."

Carl: [ˈdeɪˌæθ] /ˈdiːjˌæf+/ "De'ath."

Steven: [ˈbɔːlˌəˌwɔːtəˌændˌɡets] /ˈbawləvˈrowrən/ ... bowl of

"... bowl of water and gets..."

Given this confusion it is hardly surprising that some children should produce /fr/ or /vr/ clusters and sequences in places where the single fricative phonemes would normally be found. Such sequences have not only the monosegmental realizations referred to above, but may have an /r/ with a clearly-defined post-alveolar continuant or even the alveolar tap [ɾ]:

Tracy: [ˈkʰamzˈiɹ̥ɹəs] /ˈkamzˈivres/ "comes with us."
 (4,5)
 Dawn E: [ˈbrɛɹˈfɹəθ.ɹ̥h] /ˈbretˈfrest+/ "breakfast."
 " : [ˈkʰæɹˈfɹiːʃ] /ˈkætˈfriʃ+/ "cat-fish."

The /r/ in /fr/ is usually devoiced, but in some slow and careful utterances characteristic of young children articulating rather unfamiliar consonant clusters this may not always be the case:

Paul Sh: [fɹːˈvɹɔg] /ˈfrog/ "frog"
 Sean: [ˈkʰæfˌvɹimˌwiɹs] /ˈkæfˌrimˌwils+/ "Catherine Wheels."

/fw/ may, like /fr/, have monosegmental realization:

Carol: [ˈɪmɪˈwɹnɹ] /ˈifwiˈwont/ "If we want..."
 (5,10)
 and such realizations are found among the oldest speakers in this study:

Vivienne: [ˈdɪmɹɹˌskɹo] /ˈdifwetˌskow+/ "different school."
 (9,10)

The /w/ in /fw/ and /vw/ may among younger children be more

labio-dental than bilabial - [w],[ʋ]:

Paul Sn: ['bɛʔkʰ, fʋanʔʰ] /'bek, fwant+/ "back(to)front."

Stephen: [ɛf'wɛi'dʊnʔ'məʊv] /ɪ'fwɪj'dəʊnt'muʋv/
"if we don't move,"

Without lip-rounding [v] may result:

Stephen: [gʰənə'məʊvʋən,dæɪ] /gənə'muʋvran,dæj/
"going to move one day"

iii /θ/

Though /f/ appears for /θ/ in the great majority of cases in this study, yet the evidence of the Nursery children and the 5-year olds in this study points to a relatively early acquisition of the phoneme /θ/, which is not, however, much used in speech. Forms with^m/f/ are probably preferred for ease of articulation at the early ages, and for social reasons, as the more informal exponent, after 6 or 7 years.

The co-articulated segment [fθ] starts to become into general use at the 5-year stage. It could be argued that this segment results from confusion in a speaker's mind as to whether /f/ or /θ/ is appropriate in a given context, so that features of both are produced. However, the fact that [fθ] occurs almost exclusively in contexts where the phoneme /θ/ is used in the terminal model leads one to suppose that it is a true

contrastive allophone of /θ/. It may represent a developmental stage in the learning of the phoneme:

Kim: [fθɪŋs....'θɪŋz] /θɪŋs....'θɪŋz/ "things"
 (5,8)
 Carl: [ä'fθɪŋ kʰ] /ɑj'θɪŋkɪ/ "I think."
 (5,10)
 Stephen: ['bɛθ.fθɔɪ'pʰɑɪ,əɪ] /'bɛθdæj'pɑ:t,ɪj+/ "birthday party."
 (6,10)

iv Initial /ð/

The allophones of initial /ð/ in the Nursery phase of speech may be classified as fricatives [ð] frictionless continuants [ð̥],[z̥] and the flap [ɾ]. There are also four main types of substitution, which can be grouped under the phonemes /l/, /d/, /n/ and the alveolar fricatives /s/, /z/. Finally, /ð/ frequently has zero realization.

	Nursery	5-plus	6-plus	7-plus	9 years	Total
<u>/ð/</u> [ð]	38	34	66	66	101	305
[ð̥],[z̥]	11	17	18	13	29	88
[ɾ]	9	22	10	7	12	60
/l/	65	18	7	2	1	93
/d/	87	41	41	29	20	218
/n/	35	48	34	43	34	194
/s/, /z/	2	7	1	6	12	28
zero	18	26	16	12	16	88

Several striking facts emerge from this table. It is clear that there is a dramatic reduction in substitutions of /l/ for /ð/ between the Nursery and the 5-year stage, and an equally marked though more gradual decline in substitutions by /d/ over the whole of the period. Occurrences of the phoneme /ð/ itself increase steadily, although the fricative [ð] is not quite as common at the 5-year stage as in the Nursery stage. It is among 5 to 6 year old speakers that the flap [ɾ] has its highest occurrence. There is no appreciable increase in the use of the frictionless continuants [ʃ], [ʒ].

One development which this table cannot show is a change in the context in which /n/ substitutes for /ð/. At the older levels when /n/ or /nn/ occurs for the dental fricative it is a result of a sequence /nð/, or another nasal + /ð/

Clifford I _(8,1)	[ənnæɪ'tʃ ðaɪ]	/ənnæj'traɪ/	"and they tried.."
Dawn P: _(7,4)	[ə'næɪz'wɒbə]	/ə'nɪjz'wɒbə/	"and these robbers"
David Gr: _(9,)	[ɪgəʊ.nə'pɪtʃ]	/ɪgəwunə'pɪtʃ/	"go on the pitch"
Lindsey: _(8,1)	[ɪ'fəmnə'mɪ,dɒw]	/ɪ'fəmnə'mɪ,dəw+/	"from the middle."
Nicholas: _(5,7)	[sɪŋ'pæʔwan]	/sɪŋ'nætwan+/	"Sing that one."

This is also true of younger speakers, as the last of these examples shows. At younger levels, however, /n/ may be more

generally substituted for /ð/, in other situations than immediately after a nasal:

Nicholas: [,wanən'nəm] / ,wanən'nem / "one of them"

Paul SH: ['ðɔnə,kʰɪŋz'əʊfɪz] / 'əʊnə,kɪŋz'əʊfɪz /

"All the king's horses"

David: ['stæn²knaʔ'ʃɪpʰ] / 'stæŋknaʔ'ʃɪp+ / "sank that ship"

Dawn E: ['əʊnlə'fɪnz̥] / 'əʊnlə'fɪnz+ / "all the things"

v Medial and Final /ð/

As with 'double' articulations of /θ/, the segment [vð] appears in children's speech at about the 5-year stage, and occurs only in places where it can be considered as an allophone of /ð/:

Steven II ['bæɪ,bəɪ'buavðə] / 'bæɪpɪj'braðə / baby brother

vi /s/

When the characteristics of /s/ in the speech of 5 and 6-year olds are compared with those of Nursery speaker, one finding is that although the older children display as many non-mature features, such as palatalization, dentalization, spread-tongue articulation, as do the younger ones, there is a tendency for individual speakers to be more consistent in the use of allophones. Where Nursery children use many different realizations of /s/ in apparently free variation, the older

child will use only a limited number of 'speaker-specific' variants. Thus Carol consistently has palatalized [ʃ]:

Carol: [ə'ʃɪstə] /ə'sistə/ "a sister"
 (5,10) [ʃamʔ, tʰʌmʔʃ] /'sʌmp, tʌjɪps/ "sometimes"
 [Alɔɪʔ'bɔɪʃ] /əjləjɪp'boɪs/ "I like boys"

Both Shane (5,4) and Sean (5,11) favour dental or dentalized fricatives [θ], [ð]:

Shane: ['wenɪnə, ʒeɪ] /'wenɪnə, sɪj+/ "went in the sea."
 [ə'lɪʔv'θɒpðəðə] /ə'lɪtu'spajðə/ "a little spider"
 ['nuðəkʰɪnθ'menʔ] /'nuðəkɪns'men+/ "and all the
 King's men,"

Sean: ['kʰɛnʊ'kʰaθ'tʃɔ̃] /'kenu'kastʃə+/ "Colonel Custer."
 ['kɪzɪsməθ] /'krɪsməs/ "Christmas"
 [ɪʔ'gɛʔθ'tæŋɡvɔ̃] /ɪk'gets'tæŋɡud/ "it gets tangled"

Paul Sheekey (5,3) uses both [ʒ] and [ʃ] in place of /s/, the latter a substituted form which may be regarded perhaps as a case of over compensation on the part of a speaker who is only just becoming able to realize the opposition of /s/ and /ʃ/. /ʃ/ is similarly substituted for /s/ by Robby (7,0), who tends however to use a less palatal or an alveolo-palatal variant -[ʃ̺], [ʃ̺]:

Paul Sh: ['ʒɪŋə'θɔŋəv'θɪʔkʃpənə] /'sɪŋə'sɔŋəv'sɪksɪpəns/
 "Sing a song of sixpence,"
 ['wʌn'ʒɪftə] /'wʌn'sɪstə/ "one sister"

Paul Sh: ['ðɔnə ,kʰɪŋz 'əʊfɪz] / 'əʊnə ,kɪŋz 'əʊfɪz /
 "All the King's horses,"
 Robby: ['ʔʌpəɪdə 'væɪʃɪʃ] / + 'ɑjʃɪjdə 'ræjʃɪʃ + / "I see the races"
 ['kɪrɪməs] / 'krɪsməs / "Christmas"
 ['jʏʃɛd 'fəʊ] / 'juwʃɛd 'fo: + / "You said four."

Stephen Glynn (6,10) has the retracted alveolar [ʃ̠], for which the whole of the tongue is pulled back and slightly bunched during articulation:

Stephen: ['ʃ̠ɛʔəm 'ɔʊf] / 'setəm 'əʊf / "set them off"
 ['væɪʃ̠ɪn ,ʃ̠ɛʔ] / 'ræjsɪn ,set / "racing set"
 ['pʰɛnəɪ'tʃ̠əʊʃ̠] / 'penɪj 'tʃuws + / "Penny Chews."

By contrast, Dawn Edmeade (6,6), whose phonological system is in many ways deviant from the norms of her age (cf. 4.1111 above) has a great variety of allophones for this phoneme, including [s, ʂ, ʑ, ɛ, ɔ, ʒ], and substitutions by /t/, /k/:

Dawn: ['sɹaɪdɪŋ 'dʒəʃ] / 'srajdɪn 'do:s / "sliding doors"
 [də 'bɛʔtʂ] / də 'bets + / "the best."
 ['brɛʔ ,fɹəθ • ʂtʰ] / 'brek ,frɛst + / "breakfast."
 ['fanəʃfɪŋ • ʑ] / 'fanɪjʃfɪŋs + / "funny things"
 ['bɪgwɔɹʔ] / 'bɪgwans + / "big ones"
 [mɑ 'ʂsɪɛʔ ,tʂ] / mɑj 'sɪs -,tə + / "my sister"
 ['kʰɛʔgəʊ 'ɑ • ɪ] / 'kəwguw 'ɑj + / "So do I."
 [ɪn 'ɪʔ ,gʰ ʊ] / ɪnɪ k ,ɡow + / "in this school."
 ['sɪʔ • tɛ] / 'sittə / "sister"

Older speakers have allophones of /s/ that are less grossly divergent from /s/ than some of the allophones in Nursery speech, such as the slightly retroflex [s^ʂ]:(cf. III,5.4v):

Tony S: ['kɪɑ:s^ʂ'fɪv̥•] /'kɪɑ:s'frij+/ "Class 3"
 (8,1)
 Debra C: ['dæü'dɔ:ns^ʂ] /'duw'dəʊns / "Do Dawn's..."
 (7,5)

Articulations that are relatively late to appear in children's speech are [ʂ] and [ɛ]. Both of these require a degree of tenseness in the tongue, for the former holding the tongue bunched and pulled back in the mouth while still producing friction at the alveolar point of articulation; for the latter the tongue is pushed with some force against the roof of the mouth.

The development of allophones of /s/ can be expressed in a table:

	Nursery	5-plus	6-plus	7-plus	9 years
[s],[ɛ],[ʂ]	175	282	348	371	644
[ɬ],[ɬ]	117	44	22	9	9
[θ]	9	14	24	5	-
[ɟ]	19	26	18	11	4
[ç],[ç̥]	13	-	5	1	-
[ʁ]	20	25	32	15	16
/ʃ/,[ʃ̥] [ʃ],[ʃ̥]	3	13	9	4	4
others (including ɬ,ɱ,ɳ,ʈ,ɰ,)	20	11	3	2	1

It is interesting to see that many of these segments have a greater distribution at the 5-year level than in Nursery speech. It can be conjectured that at this period in development children become more consistent in the allophones they use, so that if a speaker uses one non-standard realization of /s/ once, he will use it again, rather than make several different attempts at the phoneme, producing differing segments in a somewhat accidental way, as the Nursery speaker might be supposed to do.. The increase in the use of /ʃ/-type fricatives after 5 years may indicate, as has been suggested above, some over-compensation on the part of the child who is learning to differentiate /s/ and /ʃ/. However, these allophones are not found in all speakers, and when we examine the degree to which /ʃ/ replaces /s/ among boys and among girls, it emerges that boys have a much greater use of this feature. Similarly boys have many more /ʒ/-type realizations of /z/:

/ʃ/ -type realizations of /s/*

Boys	Nursery	5-plus	6-plus	7-plus	9 years	Total
Boys	2	12	9	3	4	30
Girls	1	1	-	1	-	3

/ʒ/-type realizations of /z/

Boys	2	15	8	3	3	31
Girls	-	2	-	-	-	2

* Excluding the fricative in /s/ + plosive clusters or sequences.

Looked at in this way, this feature starts to take on the appearance, not of a developmental stage in the contrast of /s/ and /ʃ/, but of a dialectal feature rather like the use of [ɔ̹] as an allophone of initial /ɔ̃/, or the use of rounded vocoid glides in the vowel /aɪ/. There is no hint, however, among older boys of the use of /ʃ/ or /ʒ/ in place of /s/ or /z/ as a feature of the dialect, and the writer finds himself unable to give any explanation as to why this feature should be restricted to boys in this form of English.

vii Clusters and Sequences with /s/

a) /s/ + Plosive

/st/, /sp/, /sk/ are all well established even among the youngest speakers in this study:

Paula: [ˈspa:də] /ˈspajdə/ "spider"

Lynn: [ˈmas:,tə:dʒ] /ˈmas,stəd+/ "mustard."

Fern: [ˈskʌp] /ˈskow+/ "school."

Some speakers omit the /t/ in /st/:

Mark: [ˈgɔtˈgæk] /ˈgotˈsək/ "got stuck..."
(3,5)

Tracy: [ˌgɛtsaˈkɪn,næ:] /ˌgetsəˈkɪn,næ:+/ "get stuck in
(4,5) there."

Another young speaker conflates the bilabial feature of /p/ and the fricative feature of /s/ into one segment [ɸ]:

Paula: [ʔʌnæɪmˈɸ:o:,lə] /+ʌjnæɪmˈspowlə+/
(4,3) "My name's Paula."

It is interesting to see that where there is a long [s] in these sequences, or where there is silence between the /s/ and the plosive, or even where /s/ has non-fricative realization, the plosive may still be unaspirated, marking close juncture between two parts of a cluster or sequence:

Nicholas:	['s:deivən]	/ 'stɪjvən /	"Steven"
Lynn:	['mas:, tɛ:d ²]	/ 'mas, stɛd+ /	"mustard."
Dawn E:	['sɪs [~] , tɛ]	/ 'sɪs, tɛ /	"sister"
	['sɪ ² .tɛ]	/ 'sɪt(s)tɛ /	"sister"
Shane:	['baɪs:, gəvz]	/ 'baɪs, skowz /	"bicycles"

compared with

Paul Sh:	['aɪs:k ^x ooz]	/ 'aɪs-kowz+ /	"Icicles."
Jill:	['p ^h .A:s·'p ^h Ä:söu]	/ ,pa:s(ə)'pa:sow /	"Pass the Parcel"

Before plosives, and in particular before /t/, /s/ may be found to have spread-tongue articulation, as in [ɸ] and even [ʃ̟], [ʃ̟]. This can be tolerated in English because of the virtual absence of clusters such as /ʃp/, /ʃt/, /ʃk/. It is a feature of speech at all ages, found perhaps more among boys than among girls, and in this probably related to the generally wider use of spread-tongue articulations among boys (see above, section vi, p. 529):

Carl:	['ɸtæɪt ² 'ɪn]	/ 'stræjt ² 'ɪn /	"straight in"
Steven:	[əɪ'jəʊg, təʊ]	/ ɪj'juws, tuw+ /	"he used to."

Stephen: [ʔtuæ.əməi'æ:s] /'stræjəpmi'j'æ:s/ "straight at my
(6,10) house."

Tony S: [pʰe.ʔstɪn'ofɪʃ] /'pəwstɪn'ofɪʃ/ "posting office"
(8,1)

Debra G: [gɔ̃.mən'ʃtɪɪɪ?] /'gəwfwən'stri:t+/ "Gawthorne
(8,0) Street."

Debra C: [bɔ̃.əkiʔs] /'bɑ:skɪts/ "baskets"
(7,5)

Tony S: [nəʔpəɪ,pʰe] /'nuwspəɪ,pə+/ "newspaper."

A similar thing is sometimes found before the fortis affricate
phoneme; the segment here is interpreted as /ʃ/:

Debra C: [ʔAɪdʰ'kʰoʊtʃyʊ] /+ʔawd'koʊtʃuwm+/ "old costume"

Jackie: [ʃəm'kwɛʃ,tʃɛnz] /,ʃəm'kwɛʃ,tʃɛnz/ "some questions."

b) /s/ + Nasal

In the speech of Mark (3,5) and Tracy (4,5) these clusters
are imperfectly realized by the standards of mature speech.

/s/ may be realized as a voiceless nasal fricative at the
same place of articulation as the following nasal, or, before
/m/, as a labio-dental voiceless fricative /f/:

Mark: [əʔ'moʊnɪn] /ə'smownɪn/ "this morning"

[ʃəʔ'fmɛɪɪ?] /'juw'smelɪt+/ "You smell it."

Tracy: [gɛʔə'næʔkʰ] /getə'snæk+/ "get a smack."

The reverse sequence /ms/ is conflated by another speaker
Lynn (4,5) into a single segment with the features of labial
and alveolar articulation combined with voiceless friction.

This is a double articulation [sm]:

Lynn I:
(3,10) ['ma'næfsm'liŋ] /'maj'næjms'liŋ/ "My name's Lynn.."

c) /sw/.

The /s/ in this cluster is often assimilated in place of articulation to labial or labiodental; it may even be assimilated in manner of voicing:

Mark: [ʔəʔ'fwɔŋə] /+əw'fwɔns/ "All swans"
(3,5)
Tracy: ['fweɪɪts] /'fwɪjts/ "sweets"
(4,5)
Andrew: ['ʔæβweɪjə'pʰʊʔ] /+'æzweɪjə'put/ "That's where you put.."

It is not unusual for this cluster to be conflated to one segment:

Trevor: [ˌpɪæɪ'θɪmɪn] /ˌplæj'swɪmɪn/ "play swimming"
(3,7)
Sean: ['fʊ·m,pʰʊ] /'fʊm,pʊ+/ "Swimming pool"
(5,11)
Diane: ['sɪmɪn] /'swɪmɪn/ "Swimming"
(8,11)

d) /s/ + Liquid

There is no order of irreversibility, to use Jakobson's expression, with /s/ and /l/. One of these consonants is not invariably mastered by children before the other. This is reflected in the fact that where assimilation within the cluster /sl/ is concerned either segment may cede to the other. /l/ may move closer to the quality of /s/ by acquiring

the feature of fricative - [sɹ]:

Tracy: [ˈdɒgsˈɹɛ] / dɒgsˈle:+/ "(the) dog's there."
 (4,5)
 Sean: [ˈɹɒɹɪsˈlæftʰə] /+ˈɹɒɹɪsˈlæf-tə/ "I just (will)
 (5,11) have to..."

On the other hand, the first segment may equally take on the
 the feature of lateral articulation from the second - in
 both /sl/ and /zl/:

Tracy: [ˈlæɹwʌnɹˈlæ̃ːn] /ˈlætwʌnsˈlæjɪn/ "That one's
 laying..."

Robby: [A,ɹdɛɹˈlɑːˈɹkʰət] / ɹɹɹdesˈlɑjkkət/
 (7,0) "I just like it"

Mark: [wʊɹˈɹɪlæɹ] /wʊtˈɹzlæt+/ "What is that?"
 (3,5)

DeniseM: [ɹəɹɪɹˈlʊkˈɹn] /+ɹjzˈlʊkɪn / "he's looking"
 (6,7)

Another immature stage of articulation is found in the speech
 of Denise, who replaces the alveolar fricative with a plosive:

Denise: [ɹɹzˈtɹɹˈpˈɹn] /+ɹzˈslippɪn/ "He's sleeping"
 (3,11)

Like the other realizations described above, this differs from
 the mature norm for the cluster by only one feature, fricative
 being replaced by plosive in [tɹ], while alveolar was replaced
 by alveolar lateral in [ɹl], and lateral continuant replaced
 by lateral fricative in [sɹ].

However where one segment is omitted from the cluster it seems

to be predominantly /l/. rather than /s/:

Peter: [ɪʒ'ɪp'ɛz] /ɪz'sɪpɛz/ "his slippers"
(3,6)

Denise M [ˈwɑŋ.ˈθʊkʰɪn] /ˈwɑn'sukɪn/ "one's looking."
(6,7)

/sl/ and /sr/ are not in contrast within a word, so that /sr/ may occasionally be tolerated in place of /sl/:

Dawn E: [ˈsʌɪdɪŋ'dɔ:s] /ˈsɪdɪŋ'do:s/ "sliding doors"
(6,6)

More surprising is a case of /sl/ in place of the sequence /sr/ across a word-boundary:

Paul Sn: [sɛ:'slA:ʔ'ɛvə] /sɛw'slɑjt'ɛwvə/ "so it's right over..."
(5,3)

For some speakers a sequence of /s/ + Fricative + /r/ may become /sr/ or /ssr/:

Sean: [kɪA.s.'vɛɪ] /ˈkla:s'srɪj/ "Class 3"
(5,11)

Clifford I [ˈtɛˈhæʊŋ.əm'njɛvɛʔ] /ˈtɛlsrɛm'njɛrɛp/
(8,1)

"Tales from Europe"

e) Triple Clusters - /s/ + Plosive + Liquid or Semivowel

Many of the Nursery group have mastered such clusters as /str/, /skr/, though their articulation may be more deliberate than that of older speakers:

Margaret: [ˈs.kvɑːbɪn] /ˈskrɑːbɪn/ "scrubbing"
(4,8)

Fern: [dɛ'st.ɪŋ] /dɛ'strɪŋ/ "the string"
(3,8)

Others may omit one or two items from a triple cluster or sequence:

Trevor: ['dɪs,ɹeɪm] /'aɪs,ɹɪjɪm / "ice-cream."
 ['sɹɪ, wɒz] /'si, wɒz+ / "Squirrels."

When /s/ is the item omitted the resulting cluster is distinguished from the duple cluster /pl/, /kr/ and so on by showing no devoicing of the second element (the liquid or semivowel), and by some voicing of the plosive, which is lenis. The cluster is probably not distinguishable from clusters of voiced plosive + continuant, such as /gr/, /bl/:

Margaret: ['gʊə, dʒvaɪvə] /'gru, dʒaɪvə+ / "screwdriver."
 (4,8)
 Paul Sn: [gʊə, dʒaɪpʰ] /gru, dʒaɪp+ / "screwed up."
 (5,3)
 Shane: ['blæʃdɪnə, 'geɪ] /'blæʃdɪnə, 'sɪj+ /
 (5,4) "Splashed in the sea."

viii /z/

The occurrence of the palato-alveolar fricative [ʃ], in places where the mature language has /z/, parallels very closely the distribution of [ʃ] for /s/. As ^{the} ^{in vi} ^{above*} ~~table~~ _h shows, both [ʃ] - type realizations of /z/ and [ʃ] - type realizations of /s/ occur with greatest frequency in the 5 to 7 year period. After the age of 7 years, [ʃ] occurs for /z/ only in the vicinity of /ʃ/, where it can be thought of as a product of assimilation:

Kim: [eɪ, lɪtə, 'fɪʃ] /ɪz, 'lɪtə, 'fɪʃ / "Here's little fish"

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Paul Sh: ['səʊʒən] /'suwʒən/ "Susan,"
 (5,3)
 Robby: ['ä.ftəmi'nəʊʒ] /'a:ftəmi'nuwʒ+/ "after my news."
 (7,0)
 Clifford: [2+3,gɔʔ'ʃɔ] /+13,got'ʃo+/ "He's got shot."
 (8,1)

The alternation of [z] and [ʒ] in 5 and 6-year old speech is probably as clear an indication as can be obtained from children's speech that the contrast^{of} /z/ and /ʒ/ is established in speech at this stage of development. The relative absence of indeterminate allophones such as [z̥], [ð̥], [ʒ̥], [ʒ̥̥] at this period points to a perceptual discrimination of [z] and [ʒ]. The similarity between the distribution of [ʒ] in place of /z/ and of [ʃ] in place of /s/, combined with the fact that we know, or can be reasonably certain, of the existence of a phoneme /ʃ/ at this age, also indicates that a phoneme /ʒ/ is in existence, although the contrast of /z/ and /ʒ/ is not yet completely mastered in terms of the relative distribution of the phonemes. Some boys use /ʒ/ in many more places than mature speakers. This peculiarity of distribution can^{perhaps} be considered 'meaningful' in a sociological if not a linguistic sense. The 5 or 6 year old boy is able to discriminate [ʒ] and [z], and identifies the use of the former as a 'boyish' characteristic. The use of this allophone then, we may suggest, is a way of establishing the speaker as a member of his sex-group. It may not be irrelevant to add that two of the boys who showed this characteristic, Paul Sheekey

and Robby Goddard, gave the writer the impression of being very 'boyish', talking of their father rather than their mother, and acting rather aggressively (Robby especially) towards the other child present during their recording. (See Appendix B-).

/s/ and /z/

Among the 5-year old group in this study some cases were found of /s/ being replaced by /z/. It may be that this is a developmental feature of /z/ - possibly over-compensation by speakers who were relatively late in mastering the voiced-voiceless contrast:

Carl:	['mæɪdə'zweiʔs]	/ 'mæjdə'zwijts/	"made of sweets"
(5,10)			
Steven II:	['zamtAəms]	/ 'zamtajms/	"sometimes"
(5,5)			

Both /s/ and /z/ may be realized among younger children by plosives. In the case of /s/, an unaspirated [t] is found, and this is to be regarded as in contrast with /t/:

Steven II:	['nɪk ^h ələt]	/ 'nikələs/	"Nicholas"
(5,5)			
Paul Sh:	['tam't ^h ɑɪms]	/ 'sam,tajms+/	"sometimes."
(5,3)			
Lorraine:	['ɛn:æɪ'naʊ ^u ɪt]	/ 'ennæj'naɪs+/	"Ain't they nice!"
(5,0)			

/z/ may be replaced by /d/ or there may be an intrusive /d/ before the /z/ of plural endings:

Carol:	[βə'tweɪn:ə'wæɪvd ^z]	/bə'twɪjnə'wæɪvd+/
(5,10)		
		"between the waves."

Paul Sn: (5,3)	[,wəndə't ^ɛ awɛ]	/,wəndə'taj/	"One's a toy(sic)."
Kim: (5,8)	['ʔɪzə't ^s ɔɪdz]	/+ 'ɪzə'tɔɪdz/	"Here's the toys"
Janice: (6,8)	[,hœ·'ʃəʊdz]	/,hə:'ʃuɪdz+/	"her shoes."

ix /ʃ/ and /ʒ/

Many cases of /ʃ/ and /ʒ/ in place of the alveolar fricatives /s/ and /z/ have been described as over-compensation, though in the case of certain boy speakers over-compensation of a rather special kind. It is of course also possible for over-compensation to result in an /s/ in place of /ʃ/, and probably also /z/ for /ʒ/, though instances of this are not recorded:

Paul Sh:	['pʰæɪnʔbʊə,sɪʒ]	/ 'pæɪntbrə,sɪʒ+/	paint brushes.
Carol:	['ʃeɪləz 'pʰæɪnʔbʊəs]	/ 'ʃɪjləz 'pæɪntbras+/	"Sheila's paint-brush."

Some five-year olds have idiolectal variants of /ʃ/. Carol, for instance, uses the lateral fricative [ɬ], while Paul Sn Snellin has a number of palatal, or palatalized segments representing attempts at this phoneme:

Carol: (5,10)	['pʰʊɬɪm]	/ 'puʃɪm/	"pushed him."
	[ə 'ɬəvɔ'ɬ]	/ə 'ʃəvəw/	"a shovel"
Paul Sn: (5,3)	['ʃjaɪ ² k ^x]	/ 'ʃaɪ:k+/	"shark."
	[ə 'ʃʃə·ɪʔpʰ]	/ə 'ʃɪʃp+/	"a sheep."
	['flæɪn 'fʃɪʃ]	/ 'flaɪən 'θɪs/	"flying fish."
	['ʃɪ ² pʰ]	/ 'sɪp+/	"Ship."

As the table below will show, by 7 years at the latest this phoneme has mature usage:

Main Variants of /ʃ/

	Nursery	5-plus	6-plus	7-plus	9 years
[ʃ], [ʃ̥], [ʃ̥̥]	41	55	53	52	97
[s], [s̥]	2	5	3	1	4
[ʃ̥]	4 ⁿ	2	3	1	4
[ç], [ç̥]	17	4	4	1	-
[θ]	2	-	1	-	-
[tʃ]	-	4	-	-	-

Similarly with /ʒ/, which after the age of 7 years is confined to the situations where it may occur in the model language, that is in medial position in a limited number of words, and at word-boundaries where it is the result of coalescence of /z/ + /j/:

Dawn P: (7,4)	[tʰɛləi'vɪʒən]	/tɛliʒ'vɪʒən/	"television."
Jill: (7,9)	[wɛʃi'jɜʒəlɪ'pʰuəm]	/wɛʃi'jɜʒəlɪ'puəm/	"where she usually put them"
Terry: (7,7)	[ˈwɒʔɪʒö'vɪŋ, næɪ]	/ˈwɒtɪʒu'rɪl, næjɪ/	"What is your real name?"

x Intrusive /h/

It is interesting to note that occurrences of /h/ and particularly of intrusive /h/ are rare in the 5 to 6-year old group

and that this is the very group in which dialectal features are most marked in this study. This may be partly explained by the fact of a less formal approach on the part of both interviewer and subjects in the recordings of 5-year olds. The children were very ready to talk about themselves and their homes without stimuli to speech such as books and pictures. At the same time they were less able to repeat stories as some of the older children did, on account of less developed memories and repertoires. Among older speakers cases of intrusive /h/ were associated with linguistic activity in a relatively formal context, when a speaker was recounting a story, describing a picture in a book, interviewing another child, and so on:

Denise M: [^(6,7)'wəʔ²t^{hə}: 'ha.ʔp^h] /'wəwt^{tə}: 'hap+/ "woked her up."

Paul H: [^(6,11)ˌwʌʔ²: 'hɜv^sdəjə, lAɪʔk^x] /ˌwɒt-'helsdəjə, lɔjk+/
"What else do you like?"

Janice: [^{'wɒh}ˌAdi^ˈ'kɔ: ,ɪn] /'wɒh^hɑ:di[']kɔj,ɪn+/
"Why are you crying?"

Tony S: [ə[']heləɪ, fən²] /ə[']helɪj, fənt+/ "a elephant."

Dawn P: [^(7,4)'t^həu[']la.ɪns[˘] 'heɪ²ts. 'aɪd]
/ˈtuw[']lɔjns+ 'hijs[']sajd/ "two lines, each side."

Debra G: [^(8,0)h^ˈ: 'ævbɪn] /hɔj[']ævbɪn+/ "I have been,"

4.3 Nasals

i /m/

In gressive realizations of /m/ are relatively late developments in speech. In this study they are found exclusively in girl speakers, the youngest of whom are in the 6 to 7-year old group:

Kathleen M: [tʃɛɪst' A.ftəbɪ] /tʃæjst'a:ftəmɪj/ "chased after
(6,6) me"

Tracy P: [bA' bʌb' wɔksbət' dɔt bəɪ'dæ.ʰ]
(7,0) /maj'mamwə:ksbət'notmɪj'dæ+/ "My Mum works but not my
Dad."

These articulations are perhaps most common of all in the speech of Debra Cox:

Debra C: [ə'buɪhədʔ] /ə'bumən⁺/ "a woman"
(7,5) ['sə.bəs] /'sams+/ "sums."
[Abgəðə'gɜv d²æðə'vɜv bə'βyβ' bə'dædʔ]
/aɪbgəndə'gəwdæne'rəwmə'wɪv'maj'næn+/ "I'm going to go down the Roman with my Nan."

ii /mw/, /mr/

Among the older children in this period, but also to some extent among those under 7 years old, there is a tendency to coalesce /mw/ and /mr/ into single segments, that may be simply /m/, or lip-rounded [m̠], or for those who have labio-dental realizations of /r/ or /w/, [m̠]:

- Clifford: ['mæmʊz 'la: ,fin] / 'mæmʊz 'la: ,fin+ / "man was
(8,1) laughing."
- Lindsey: [gəə ,mæ^u mʊ 'ga əz] / gəwə ,mæ: mu 'ga jz+ /
(8,1) "going round with guys."
[ʊmɪ 'pi ær 'gæ ɪŋ] / ʊmwi 'plæ j 'gæ jms+ /
"and we play games."
- Paul H: [s . 'lɒv 'dæ: 'mɛɪ n 2 nɛər] / 'slɒw 'dæ: m wə wnt næ j+ /
(6,11) "slow down, won't they?"
- Terry: ['k^x æm ɛ . nd] / 'kæm ræ: nd / "come round"
(7,7)

iii /n/

As with /m/, non-nasal ingressive realizations of /n/ start to appear in the speech of girls of 6 or 7 years. At this age, however, non-nasal plosives or egressive flaps are more common than the ingressive contoids:

- Tracy P: [əd³ ə 'væ be 2] / əd ə 'ræ bit+ / and a rabbit.
- Janice: [,sɪ d: ə 'vɛ lə] / ,sɪ dd ə 're lə / "Cinderella"
- Dawn E: [,dɒ ɒ d 'ɛ d[~] 'mɛ i] / ,dɒ wd 'ɛ d- 'mi j+ / "Dawn Edmeade."

It is 8 and 9-year olds who make this feature a consistent part of their speech. Again, Debra Cox is a good example:

- Debra: ['ski ,p^hɪ d^ɪ] / 'ski ,pi n+ / "skipping."
[ə 'sɪ dʒɪ ,bæ ə d^h] / ə 'snəw ,mæn+ / "a snowman."
[,wɛ dʒɪ 2 kām ,æ^u 2[~] dɛ i 'aɪ ə d^ɪ] / ,wɛ ni k kām ,æ: t- di j 'avən+ /
"When it come out, the oven, "

For one speaker, Dawn E, /n/ has palatal or alveolo-palatal articulation [ɲ] immediately before or after an alveolo-palatal segment:

Dawn E: [ˈdɪɲnævˈɛniˈnɛʊð] /ˈdɪdənævˈɛniˈnuwz/

"didn't have any news."

[ˈsɪɪdɪɲˈɟɔs] /ˈsɪɪjdɪnˈdo:s/ "sliding doors."

The word "other" may be learnt by some children in the form /navə/, by metathesis presumably from "an other":

Kathleen M [ɪsˈlɑ.ʔðəˈnävə, dæɪ] /ɪsˈlɑjkðəˈnavə, dæj+/

"It's like the other day."

[əʔðəˈnavə, sA.dʒ] /ətðəˈnavə, sɪjd+/

"at the other side."

Dawn P: [ˌæɪˈnavə˞ˈpʰɛnɛɪ] /ˌæjˈnavəˈpenɪj+/

"A nother penny."

iv /ŋ/

Non-nasal alveolants of /ŋ/ are all egressive in this study:

Debra G: [əˈlɔgˈdʒɛːnɛɪ] /əˈlɔgˈdʒɛːnɪj/ "a long journey"

Debra C: [ˈdɑːʔs.ədˈsɪg.ʔ] /ˈdɑːtsədˈsɪg+/ "dance and sing,"

Lindsey: [ˈægkˈətʃɪf] /ˈægketʃɪf/ "handkerchief"

In the model language /in/ and /ɪŋ/ are in free variation in certain positions. Before the child learns that this variation is confined to verb and participial endings he may well

introduce it in other contexts:

- David: [ˈbɪnɪʔˈbɛʔ] /ˈbwinɪpˈbɛk/ "bring it back"
 (4,5)
 Steven II [ɪzˈɪ:vɪnz] /ɪzˈi:rɪnz/ "his earrings"
 (5,5)
 Shane: [ˈnʊdəkˣɪŋθˈmɛn˧] /ˈnʊdəkɪnsˈmɛn+/ "and all the
 (5,4) King's men,"
 Carol: [gɔʔˈskɪŋ,æ:ŋɪn] /gɔtˈskɪŋ,æŋɪn/ "got skin
 (5,10) hanging..."
 Tony S: [ʔɛzəˈdʒɛŋvʊ] /+ɛzəˈdʒɛŋru/ "there's a general"

/ŋ/ is usually omitted in the words "wellington boot":

- Clifford I [ˈwɛlɪʔəm,bəʔɪʔ] /ˈwelɪtəm,buwt+/
 ˘
 "Wellington boot."

The coalesced forms of "I'm going to" - /aŋənə/, /aŋge/, /aŋgenə/ and so on - seem to occur mainly in the recordings of 5 and 6-year old informants, an indication that these are forms that are felt by the children to be dialectal:

- Steven II: [ˈAŋgeˈsæ̃ːɪʔ] /ˈaŋgeˈsæjɪt+/ "I'm going to say
 (5,5) it."
 Robby: [ˈɛŋ:nə,lAɪʔəˈwɔkˣɪʔ˧] /ˈaŋənə,lajtəˈwokit+/
 (7,0) "I'm going to light a rocket."
 Kathleen M [ˈAŋgenəˈbɔrsəmˈspɔ:ʔkɪəs˧]
 (6,6) /ˈaŋgenəˈbɔjsəmˈspɔ:kkɪəs+/ "I'm going to buy some
 sparklers."

4.4 Liquids

1 /l/

At an early stage of development it appears that some children have not learnt to differentiate final and initial/medial /l/, failing to velarize the lateral in final position, as in :

Trevor: ['dæɪ, βɜː 'tɪl, jə] / 'dæj, wɪ 'tɪl, jə + /

"They will kill you."

It has been suggested (IV,3.21v) that this utterance represents an even earlier stage of development for this speaker than his chronological age (3,7) suggests: final unvelarized /l/ is here a relapsed articulation, brought on by a moment of alarm. In the early stages of speech a final /l/ may be transformed into medial /l/, and a monosyllabic word into a disyllabic, by the addition of an intrusive vowel:

Fern: [,dæɪz 'dɔ̃ • ,ləz] / ,dæwz 'dɔ̃ ,ləz / "those dolls."

This may be the result of an adult's 'spelling pronunciation', in which final /l/ is given an exaggerated, unvelarized articulation.

At a later stage final /l/ is velarized, but some children extend this velarization, irregularly by mature standards, to word-final /l/ that is inter-vocalic, and thus syllable-medial. In this context 9-year old speech would have a clear

unvelarized /l/, except where /l/ was a reduction of the sequence /lɔ̃/. The younger children (5 and 6-year olds) may have adopted velarization from this situation, or their utterances may be products of over-generalization of a newly-acquired rule concerning final /l/:

Sean: [ˈfɛɹɪ, ɪndəˈwɔːɹ, hɔ] /ˈfel-, ɪndəˈwɔwt, ə+/
(5,11) "fell in the water."

Stephen: [ˈföʊɹəˈkʰa.ʃ] /ˈfowl-əˈka:s+/"full of cars."
(6,10)

In mature speech, either inter-vocalic word-final /l/ is unvelarized, and there is no vocoid glide towards back half-close, or the vowel + /l/ sequence is a vocoid glide to back half-close, and there is no [ɭ]:

Jāhn: [ˈbɔʔksfʊləˈwʊdʰ] /ˈbɔksfʊləˈwʊd+/"box full of
wood."

Jackie: [ðəˈgɛɹɹn:ˈgɛɹ] /ðəˈgel-unneˈgel-/
"the girl and the girl"

[ɹ] is found before consonants or, if before a vowel, then in open juncture with it, a juncture which is marked by glottal onset to the vowel:

Terry: [ˈpʰeɪˈɹɹɪˈɹeɪ] /ˈpij-ˈel-ˈij+/"...P.L.E."

Debra G: [ˈliheɪˈsɪs, tɛ] /ˈlihəlˈsɪstɹə+/"little sister."

11 /r/

The mature phoneme /r/ develops from an archiphoneme //w//, comprising /w/ and /r/. As the following table shows, substitution of /w/ for /r/ decreases appreciably as the age of speaker increases:

Realizations of /r/(excluding occurrences in /tr/, /dr/)					
	Nursery	5-plus	6-plus	7-plus	9years
/r/ -[ɹ]	29	26	19	18	187
[ʋ],[ʋ̥],[ʋ̥̥]	135	112	133	137	95
/w/ - [w]	25	6	4	3	1
[ʍ]	2	4	6	6	3

Of allophones of /r/ proper, the ratio of post-alveolar [ɹ] to labio-dental realizations is about the same for the Nursery and the 5-year stage, after which [ɹ] actually declines in frequency at the 6 and 7 year levels. In these groups, in fact, [ɹ] was found predominantly in clusters of Plosive + /r/. In other words, it would seem to be the case that in the early stages the speaker fluctuates between different realizations of /r/ and substitutions by /w/. Then, after the 5-year stage, usage becomes more consistent, and after 8 years or so [ɹ] becomes very much more generally used, although some speakers may never adopt its use completely.

Among the rarer allophones of /r/ recorded in this study were the alveolar tap [ɾ] - used particularly by Dawn Edmeade - and the labio-dental 'protruded-lip' fricative [ʋ]:

Dawn E:	[ˈɛvrɪɪʔdʒæɪ]	/ˈevrɪtˈdæj/	"every day"
	[ˈkʰæʔfɾiːʃ]	/ˈkæt,frɪʃ+/	"cat-fish."
	[ˈbrɛʔfɾəθ.gtʰ]	/ˈbrɛt,frɛst+/	"breakfast."
Kim:	[ɔləˈrɪz]	/owleˈrɪz/	"all there is"
Carl:	[ˈkɪrʔzɪəˈævdʔ]	/ˈkli:zzəˈrɔwd+/	"clears the road."
Dawn P:	[weɪˈwɛɪdʔɪdʔ]	/wɪjˈrɪjdɪd+/	"we readed,"

Linking /r/

The rule by which certain vowels are linked to other vowels across word-boundaries appears to be learnt quickly by younger speakers. However it is often misapplied, by the standards of older speech, especially after "a", where /ə/ + /r/ + Vowel may appear in stead of "an" before a vowel:

Paul Sn:	[ˈɪɹʔtsəvʌkˈkɑ:]	/ˈɪtsərəwˈkɑ:/	"it's a old car"
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Similarly we may find /ðə/ + /r/ instead of /ði/ before a vowel:

Paul Sn:	[ˈapʰɪnə,vɛ]	/ˈapɪnə,ɾe:/	"up in the air"
Steven: II	[ˈdæən:əˈvɪrɪ]	/ˈdæ:nnəˈrɪl+/	"down the hill."

Sometimes linking /r/ is found after a vowel which in older language may not precede an /r/ of this type, such as /aj/:

Tracy: ['lesə'gaɪ'vænɪ?] /'lesə'gaɪ'rænɪt+/ "That's a guy, ainit?"
(4,5)

Dawn E: [ma'vavə'gɪsɪts] /maj'ravə'sistəɪ/ "my other sister."
(6,6)

It is probable that these forms are the result of the child's learning words in a metathetical model, such as /'rænɪt/ for /'ænɪt/ "ainit?", /'ravə/ for /'avə/ "other". This would account for intrusive /r/ found after consonants:

Mark: ['medɪsən'rænɪ?] /'medɪsən'rænɪt+/ "medicine, ainit?"
(3,5)

Lindsey: ['k^xɪlɪn'væn?ɪs.] /'kolin'rant,ə+/ "Colin Hunter."
(8,1)

111 Clusters /tr/, /dr/

As has been shown, Nursery speech is characterized by a certain amount of confusion between different affricates, and most particularly between the affricates /tʃ/, /dʒ/ and affricate realizations of the clusters /tr/, /dr/. The history of these clusters over the 5 to 8 year period is one of developing contrast between them and the palato-alveolar affricates. One of the ways in which children realize a contrast between these two pairs of items is to make the clusters /tr/, /dr/ a disjunct sequence in comparison with the affricate phonemes. Some realizations give the auditory

impression of having two elements in open juncture. The plosive is released and may have quite heavily affricated release before the /r/ is articulated. In ~~both /dr/ and /tr/~~, the /r/ may not be devoiced by the preceding plosive, and may be continuant rather than a fricative - [tʃv], [dʒv], [tʁv], [dʒr] and so on. These rather clumsy articulations must be considered a product of relatively immature articulation. It should be noted, however, that they persist in speech right through the period covered by this thesis, and ^amy be found in the 9-year old group. This is probably the area of articulation which is the last to be mastered by the child:

Fern: (3,8)	[tʃʷi·ʊv'æ₂,pʰo·z]	/tʁiʝov'æp,powz/	"tree of apples."
Steven: (4,9)	[ðə'dʒvæŋən]	/ðə'dræŋən/	"the dragon."
Paul Sh: (5,3)	[,tʃvæɪn]	/,træjn/	"train"
Shane:	[tʃva:nv'eiɪɪm]	/tʁa:nu'ijtim/	"trying to eat him"
Janice: (6,8)	[ə'bes·,dʒrɛs]	/ə'bes,dres/	"her (aʃ) best dress."
Stephen: (6,10)	[ə'leɪtʃ vɪɪk'tʃ væɪn,sɛɪ]	/ə'lettrik'træjn,set/	"a (e)lectric train set."
Tony S: (8,1)	[dʒvɔ:də'pʰɪɪtʃə]	/dʁo:də'pittʃə/	"drewed a picture"
Dawn P: (7,4)	[ə'dʒwɛəs]	/ə'dres+/	"a dress,"

iv Consonant + Liquid Clusters

There is a tendency in Cockney as in other forms of English to reduce the unstressed weak vowel between a consonant and /l/ or /r/ in trisyllabic words such as "family", "Highbury", "general", "Happily", thus reducing the word to a disyllable, and producing a Consonant + Liquid cluster or sequence:

David G1:	['fæmləi]	/ 'fæmli j /	"family"
Steven II:	['fæm ə , lɪ .]	/ 'fæm(ə) , lɪ - /	"family"
Tony S:	[ə 'dʒenju]	/ ə 'dʒenru /	"a general"
David Gr:	['aɪbəɪ]	/ 'aɪb(ə) rɪ /	"Highbury"
Janice:	['hæ pləɪ 'ɛvə 'ɔ:ftə]	/ 'hæpli j - 'evə - 'a:ftə + /	"happily ever after."

Weak vowels are similarly elided before a stressed syllable as in "balloon", "collect", "Teresa", "Carina", producing a cluster or sequence /bl/, /kl/, /kr/, /tr/. Where the first element is fortis the liquid may be devoiced, though this is not always the case:

Fern:	[ə 'blɛy ^h .]	/ ə 'bluwn + /	"a balloon."
(3,8)			
Elaine:	['kɛʃ ^h 'ʃɛz]	/ 'klek 'ʃelz + /	"collect shells."
(9,)			
Dawn P:	['lændən 'pɛɪdɪ ə m]	/ 'lændən 'plæjdɪəm /	"London Palladium"
(7,4)			
Teresa:	['tɛ ^h rɛɪzə]	/ 'trɪjzə /	"Teresa"
(9,10)			
Tracy P:	['kɛɪ . nə]	/ 'krɪj , nə + /	"Carina,"
(7,0)			
Andrew:	['pɛɪn 'pɪsɪz]	/ 'plæjn 'plijsɪz /	"playing polices"
(4,0)			

This occasionally produces over-compensation by children who introduce an intrusive /ə/ between the two elements of a Plosive + Liquid cluster:

Paul Sn: [əʔə'kʰantʰəʊɪ] /ətə'kanteri/ "at the country..."
 David Gr: [bə'ɹæj.kɪtʰ.ʔ] /bə'ræj,kit+/ "break it."
 Elaine: [gə'la:s] /gə'la:s/ "glass"
 Tony S: [ən'ambə'vɛlə] /ən'ambə'relə+/ "an umbrella."

There may also be a release of the first, plosive, element, behaving as if it were in open juncture with the subsequent liquid in the sequence, rather like some realizations of /tr/, /dr/, though occurring much less frequently:

Debra C: [pʰvæ.mz] /'præmz/ "prams"
 Kathleen: [gʰɹæ.ŋ'flə] /,græ:m'flo:+/ "ground floor."

Coarticulated Segments

For the youngest children in this survey Plosive + Liquid clusters present little articulatory difficulty. The liquid is normally devoiced, and may be fricative:

Steven [!kɪɪmdəŋ'kɪaɪm] /'klaɪmdəŋ'klaɪm/ "climbed and climb(ed)"
 Mark: [pɪæf'fʊʔ,bəʊβ] /'plæjn'fʊp,bəw+/ "playing football."
 Andrew: [kɹɪstəfɪz] /'kristɪjnz/ "Christine's"
 Fern: [pɹɪʔɪɪ'ag:,lɪ] /'prɪtɪj'ag,əli+/ "pretty ugly."

One very energetic realization of /pr/ by Fern takes the form

of a bilabial trill [ʙ]

Fern: [gʌʔdə'ʙ·ɪnʔ,sɛs] /gotdə'prɪnt,sɛs+/ Got the
princess."

However, the coarticulated articulations [pɹ],[pɻ],[kɻ] for /pr/, /pɹ/ and /kɻ/, noted in III,5.3ii are relatively late arrivals in child speech. In this study they are noted among 7-year old speakers and above:

Dawn P: ['gʊəŋ'klɪ·f] /'guəŋ'klɪf+/ "Go on, Cliff."
(7,4)

Clifford: ['nevə'plæ·ən·'stɹɪɪʔs] /'nevə'plæjənə'strɪjts/
(8,1)
"Never play on the streets"

Lindsey: [ə'pɹɪpʰɛ̃.] /ə'prope/ "A proper..."
(8,1)

It was noted above (4.4ii) that most occurrences of the post-alveolar [ɹ] among the 6 to 7 and 7 to 8-year old speakers were in clusters of Plosive + /r/. It may be as part of the process of increasing the efficiency and economy of speech that children over this period start to abandon the relatively clumsy and slow articulations [pɹ],[kɹ],[gɹ] and so on in favour of the more close-knit articulations [pɹ],[kɹ],[gɹ], in which the tongue can begin to be taking up the position for /r/ while the plosive articulation is under way, rather than waiting for the completion of the plosive before the lips and teeth start to form a position for [v]. It may be suggested that [ɹ] is first mastered in these clusters, and then extended to other positions at the 9-year stage - and probably extended

to /tr/ and /dr/ last of all. We may refer here to the observation of Spriestersbach and Curtis (1951, p. 485) that some speech-defectives are able to articulate /r/ in clusters although their production of the sound is defective in other places; they suggest that correct articulation in these contexts be used as the basis for improving articulation in other contexts.

/kl/ and /gl/

There being no clusters of the type /tl/, /dl/ in English in contrast with /kl/, /gl/, there is some tolerance for variation in the place of articulation of the latter clusters, that would not obtain for example for /kr/, /gr/. The plosive in /kl/ is usually velar [k̠] but may also be alveolo-palatal [t̠] or alveolar [t̠]. With /gl/ there is found only one case of an alveolar plosive, in the speech of Peter (3,6), who had difficulty anyway in producing velars:

Dawn E: (6,6)	[,t̠iɪ·ɹɪn'əp̠]	/,kli:rin'ap+/	"clearing up."
Kathleen M: (6,6)	['sp̠A·ʔt̠iəs̠]	/'spa:kkləs+/	"sparklers."
Janice: (6,8)	[ðə't̠iXʔk̠]	/ðə'klok-/	"the clock"
Robby: (7,0)	[ʔyʔ't̠iAʃəüɪn]	/+uk'kla:ʃuwin+/	"What class you in?"
Peter: (3,6)	[ə'd̠.laʔy]	/ə'glav+/	"a glove."

Alternation of Liquids in Clusters

In this study it has been found that /r/ is occasionally substituted for /l/ in clusters of Consonant + Liquid. In no case has /l/ been found to replace /r/ in a cluster within a word:

Steven:II ['bʊəʊziʔtʰ] /'brəʊziʔtʰ/ "blows it."
Tony S: ['mæ·m,brʊ·ən˘] /'mæm,brəʊən/ "man blowing..."
Clifford I ['ʁənə'buəʔkʰ] /'rənə'brəkʰ/ "round the block,"
Peter: ['fʁaɪd'æ:ʔ] /'fraɪd'æ:t/ "fled out"
Dawn E: ['sɹaɪdɪp'ɟəəs] /'sraɪdɪn'do:s/ "sliding doors"
Though /l/ replaces /r/ in:

Paul Sn: [sə:'slA:ʔ'sʁvə] /səws'lajt'əwvə/ "so it's right
over.."

and in this connection may be noted varying forms of the word "piano" in the speech of Robby (7,0) - ['piænəʔ] /'plænə+/, ['pɹænəz] /'prænəz/ "pianos"

v Paul Snellin

One speaker, Paul Snellin (5,3), though capable of producing both /b/ and /d/ singly, commonly replaces the clusters /br/ and /dr/ with /gr/, and /bl/ with /gl/:

['bɛəʔd] /'bed+/ "bed."
['dæn:ə'læɪn] /'dænnə'læɪn+/ "down the Lane."
[ʔgʁɛəʔh] /'gred+/ "Bread."
['ʃaʔdə'gʁɪ:ʔʒ] /'ʃatðə'grɪʔʒ+/ "shut the bridge."

[^h gʷoŋk ^h oode ^h wɔo.ʔə]	/ ^h grɔŋkowde ^h wowtə+/
	"drunk all the water."
[^h gvəim,mæ:s]	/ ^h grijm,mæ:s+/ "green mouse."

Thus there is no contrast for this speaker of /br/, /dr/ and /gr/, and we may speak of an archiphoneme //GR// operating in place of these clusters. Strangely enough, Paul also replaces the velar phonemes with /d/ or /t/ in places; in other utterances velars and alveolars overlap in the alveolo-palatal segments [tʃ],[dʒ], while in some utterances /k/ and /g/ are found, correctly used by mature standards:

[^h badʒ ^h 'ba,nəi]	/ ^h badz ^h 'ba,nij+/ "Bugs Bunny."
[^h t ^h ɐ̃ɛʔt ^h]	/ ^h tajt+/ "Kite."
[^h t ^h æo]	/ ^h tæl+/ "Tail."
[^h t ^h ɛ ^h a ^h p ^h]	/ ^h kap+/ "Cup."
[ʔit ^h ɛn'daɪ.v]	/+iken'dajv+/ "He can dive."
[^h dʌʔə'nəü,t ^h ɛlẽ]	/ ^h gotə'nuw,telij+/ "Got a new telly."
[^h k ^h ˥˥.sgɛ̃u'kwos,iʔ]	/ ^h ka:sgew'kwos,it+/
	"Cars go (a) cross it."

It might seem at first sight contradictory that this speaker has the velars apparently well-established in voiced plosive clusters, where they appear at the expense of labials and alveolars, but that single velars are not consistently contrasted with alveolars, while single labial plosives are

well established. Paul's plosive system makes more sense if viewed in terms of archiphonemes. Then we see that at this phase of development the phonemes /k/ and /t/ are emerging from a mass unit //T// and /g/ and /d/ from another unit //D//, while the archiphonemic clusters //GR// and also, probably //GL//, have not yet started to split into their component parts, /br/, /dr/, /gr/, and /bl/, /gl/.

4.5 Semivowels

i /w/

For mature /w/ Nursery speakers were found to use segments [w],[v] and [ʋ], and the labio-dental but rounded [ɰ]. The occurrences of these segments with age is as follows:

	Nursery	5-plus	6-plus	7-plus	9 years
[w]	261	146	117	161	398
[v],[ʋ]	18	8	7	3	1
[ɰ]	1	5	10	11	7

It is clear that /r/-type realizations of /w/ ,[v] and [ʋ], show a decline in use with age, whereas the figures for [ɰ] show first a slight increase in the 6 and 7-year groups of speakers, before diminishing slightly among 9-year old speakers. If these figures are compared with those for the

same segment in place of maturem/r/ in the table in 4.411 above, it will be seen that the same pattern emerges there, so that the total figures for this segment are:

	Nursery	5-plus	6-plus	7-plus	9 years
[w]	3	9	16	17	10

It seems certain then that this relatively complex articulation is associated with the later stages of development in speech. Whether the apparent decline in the use of [w] at 9 years is a true reflection of the development of this feature it would be hard to say. Too much should not be read into such a small sample as this. It may be that [w] represents a stage through which children pass on their way to a mature treatment of the /r/ - /w/ contrast. On the other hand labiodentalization of /w/ may be a feature of some Cockney idiolects.

Other allophones recorded for /w/ include the relatively rare bilabial fricative [β]:

Nicholas:	[ˈdʊnʔˈβaɪ]	/ˈdowntˈwarij/	"Don't worry,"
Terry:	[ˈɪβowɪˈsɛd]	/ˈi:wowiˈsed+/	"hear what we said"
Jill:	[aˈβa.n]	/aɪˈwan+/	"I won."

/w/ may also be replaced by /b/, and very rarely by /v/:

Debra C:	[əˈbʊfəd]	/əˈbumən+/	"a woman."
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Steven II: [ɪ'bɛ:ksɪnnə'mɪʃən] /ɪ'bɛ:ksɪnnə'mɪʃən/

"He works in the Mission."

Dawn E: [ɪ'vɒt,wandəʃə'lɑɪk+] /ɪ'vɒt,wandəʃə'lɑɪk+/

"What one do you like?"

Clusters with /w/

There is a tendency for clusters of Consonant + /w/ to coalesce their features into one labialized segment. Thus /fw/ becomes [fʷ], /mw/ becomes [mʷ] and so on (see 4.211; 4.311). Clusters of Labial Plosive + /w/ may result in a labial fricative. /fw/ may become [ɸ], /bw/ [β] :

Carol: [ɪ'mɪ'wɒnʔ] /ɪ'fwi'wɒnt/ if we want...

Kim: [ɪ'kɔβ:webz] /ɪ'kɒb,webz+/"Cobwebs."

ii /j/

Syllabic /j/ is often an expression of unstressed "you":

Carl: [ɪ.əv] /jɪ,əw+/"you know."

Nicholas: [ɪ'pʰʊtə'bʌb] /jɪ'putə'bawb/"You put a bulb"

Terry: [ɛ'nɛ.wɒtɪ'pʰanʔ] /jɪ'nəwwɒtjɪ'pant/
"you know, what you pump"

Kathleen: [ɟɪ'dʒəv] /jɪ'du/ "You do..."

Fronted vocoids in the sequence /juw/ or /ji/ in place of /juw/ do not appear to be a feature of speech before 6 or 7 years:

Kathleen M: [ɪ'dæ:nwɪ'wɪv'ɟɪ] /ɪ'dæ:nwɪ'wɪv'juw+/"down... with
(6,6) you."

ill [ɪ'jɪʒəl

Jill: ['jɜ:əlɪ] / 'jɪzəlɪ / "usually"
 (7,9)
 Robby: ['dʏə 'lɪ:ʔ] / 'duwɜ:(dɪjə?) 'lɪjk /
 (7,0) "Do you like...?"

As at the 9-year stage the greatest variation in realization of /j/ is found in the word "yes" - ['ɛjɛ], ['jɛ:], ['dʏɛ] ['ʒɛ.], ['mʏɛ.], ['ʌɛ.].

iii Coalescence of Alveolar ^{Consonant} Plosive + /j/

In the mature system a feature of rapid connected speech is the coalescence of sequences of /t,d,s,z,/ + /j/ into the palato-alveolar consonants /tʃ,dʒ,ʃ,z/. These coalesced forms are found at all ages, but a comparison of the number of times these elements coalesce and the number of times they remain as the sequences /tj/, /dj/, /sj/, /zj/ across word-boundaries at different age-levels gives the following picture:

	Nursery	5-plus	6-plus	7-plus	9 years	Total
Coalesced Forms	6	4	15	19	51	95
Uncoalesced Forms	18	5	17	4	16	60

In this table, /də'juw/ was counted as an uncoalesced form, in comparison with the completely coalesced /'dʒuw/. It is a large number of questions beginning /də'juw/ from Paul Hill

(6,11) that account for a high proportion of uncoalesced forms at the 6-plus level. This does not however disguise the fact that 9-year old speech has a far higher proportion of coalesced forms than Nursery speech, and that the development of speech sees an increase in the ration of coalesced to uncoalesced forms, from 1:3 at Nursery level to 3:1 at the mature level.

The type of coalescence discussed here takes place across word-boundaries in the main. However among younger speakers some over-compensation may result in alveolar + /j/ sequences in place of mature /tʃ, dʒ, ʃ, ʒ/ within a word:

Tracy:	['wɔslæʔ'dʒa:]	/ 'wɔslæt'dʒa:+/	"What's that jar?"
Dawn E:	['mɪʔtʃɔɔ]	/ 'mittjow+/	"Mitchell."
Jamie:	['dʒelə,fɪʃ]	/ 'dʒelə,fɪs+/	"jelly-fish."

4.6 Affricates

Alveolo-palatal articulation affrication for /dʒ/ persists until the 9-year old stage (cf. III, 5.8.ii). Strangely however similar articulations in ʒ/tʃ/ - [tʃ] or the palatalized [tʃ̟] - occur only rarely after the 5-year stage:

Nicholas:	['wɪʔtʃæp ^h o]	/ 'wɪjt'tʃæpow/	"Whitechapel"
(5.7)			
Paul H:	['p ^h ɪʔtʃəs]	/ 'pittʃəs /	"pictures"
(6.11)			

Stephen: [ˈpʰɛnəɪˈtʃəʊs̥] /ˈpenɪjˈtʃuws+/ "Penny Chews."

Confusion among the affricates after the Nursery stage arise only in occasional alternations of /tr/, /dr/ with /tʃ/, /dʒ/.

Where a phonetic unit that may be identified as /tr/ or /dr/ does occur in alternation with the palato-alveolar affricates it is only the close-knit realization that is involved:

Shane: [ˈpʰafə, tʃæɪn] /ˈpafə, tʃæjn/ "puffer train"

Stephens [ˈbe, dʒʊm] /ˈbe, dʒʊm/ "bedroom"

Nicholas: [ˈdʒʌŋɡʊ, buˈkʰ] /ˈdrʌŋɡʊ, buk+/ "Jungle Book."

Janice: [ænd̥ˤeɪˈtʃæɪsɪtʰ] /ændɪjˈtræjsɪt/

"and he changed (traced? chased?)
it..."

One speaker, Debra Garnes (8,0) produces alveolar plosives /t/, /d/ with palato-alveolar affrication, which may cause some overlap in her speech of these consonants and some of her rather less affricated realizations of /tʃ/, /dʒ/:

[ˈdʒəstɒndəˈtʃə:nɪn] /ˈdʒəstɒndəˈtʃə:nɪn/

"just on the turning"

[əˈkʰɛpəˈtʃɛɪ] /əˈkapəˈt(tʃ)ɪj/

"a cup of tea"

Single plosives, whether affricated or not, may replace the affricates in some places. This applies particularly to the lenis /dʒ/:

Denise:	[əne,dʒɹs'lu:kʰɪn]	/əne'dis'lu:kin/ "and they're just looking"
Paul H:	[,dʒɹskʰam'ɪn]	/,dʒɹs-kam'in / "just come in"
Terry:	['nɛɪd̥.]	/'naɪd+ / "Nige," (= "Nigel")

CHAPTER VI - A TEST OF SPEECH-SOUND DISCRIMINATION

1.1 Aim of the Test

It has been noticed in preceding chapters that certain pairs of speech-sounds are from time to time confused in the speech of these children, either through the processes of phonological development by which mature phonemes develop from the archiphonemic units of infancy, or through the phonetic similarity of items within the Cockney phonological system. This test was designed to obtain a measure of children's ability to discriminate speech-sounds in spoken words uttered by their peers or children of different ages but from the same linguistic background - from the same school, in other words. It was hoped to elicit a measure of a general discriminatory ability over an age-range of 6 years, and also a measure of the relative discriminatory ease or difficulty of specific pairs of speech-sounds.

1.2 Construction of the Test

23 pairs of words were chosen to illustrate selected confusions between phonemic items. The list of words is presented in Table 7. The pairs were minimal pairs, or differed in one phoneme only. Thus BLUE - BALLOON differ for many young speakers only in the presence or absence of final /n/, as in /'bluw/ - /'bluwn/ or, possibly, in very formal speech,

/bə'luw/ - /bə'luwn/. PAN - POUND has a contrast of presence or absence of final /d/. Two pairs, PILE -PIE and TAIL - TOWER differ in two phonemes, but as we have seen the sequences /ɑ:l/ and /æ:l/ are most commonly realized as vocoid glides, so that these pairs illustrate a contrast of two phonetic vocoidal units, even though on the phonemic level a less simple contrast may seem to be involved. There is of course the possibility that final /l/ may be articulated as a velarized lateral, in which case the contrast does become somewhat more complex.

As far as possible the words used in this test were items which were judged to be familiar to young children, and were concepts that could be relatively easily depicted. Picture-cards with both a picture of the object or concept and the printed word were used to elicit the desired words from children at all age-levels within the school. From recordings thus obtained six tapes were prepared, on each of which 23 words, each one a member of the 23 pairs to be tested, were spoken by 6 boys of different ages, from classes 1,2,3,4,5 and the Nursery class. The boys' ages at the time they were recorded were as follows:

Tape 1 (Ian Macartney)	10,9
Tape 2 (Tony Simcock)	9,3
Tape 3 (Paul Harmon)	8,2
Tape 4 (Paul Scally)	7,0
Tape 5 (Paul Snellin)	5,5
Tape 6 (Trevor Rees)	4,9

Each spoken word was recorded twice from the original tape on to the test tapes, and these recordings were then played to other children, both boys and girls, and also to the boys whose voices provided the material for the test. 24 listening sessions were conducted for each of the 5 age-groups above the Nursery class, so that 24 speech-sound discrimination scores were obtained for the 5-year olds (Class 5), for the 6 to 7 year olds (Class 4), for the ^{7 to} 8-year olds (Class 3), for the 9-year olds (Class 2) and for the 10 to 11 year olds (Class 1). A total of 120 listenings took place: 4 children in each class or age-group listened to each of the 6 tapes, so that 20 children of all ages listened to Tape 1, 20 listened to Tape 2 and so on.

1.3 Selection of Subjects as Listeners

In all 68 children took part in the test as listeners. All were born in England of English-speaking parents. None had markedly defective hearing (though audiograms were not

available for all of the younger subjects). None was considered educationally sub-normal. The age-range of the subjects was 5,1 to 11,2. In the top classes boys and girls were used in equal numbers. ^uMost children listened to two recordings, some only one. In the lowest class, Class 5, there was a preponderance of girls, so that 14 girls' but only 10 boys' listenings could be conducted. Two children from Class 5 did the test 3 times to make the numbers complete. This may have biased the scores slightly in favour of younger children, though it seems unlikely.

Ages and Numbers of Tests Taken by Children in Fordway School

Class	Age-Range	Median Age	Mean Age	Number of Children who Took:			Total Number of Children
				1 Test	2 Tests	3 Tests	
1	9,11 - 11,2	10,4	10,5.3	4	10	-	14
2	8,4 - 9,7	9,3	9,0.4	2	11	-	13
3	7,3 - 8,3	8,1	7,10.7	-	12	-	12
4	6,3 - 7,3	6,7	6,8.3	8	8	-	16
5	5,1 - 6,2	5,5	5,4.7	4	7	2	13

Nursery Children not Tested

No Subjects from the Nursery Class were used as listeners in this test, This was due partly to the limited amount of time available to the tester. As the age of a subject diminished, so the amount of time increased that had to be spent on explaining what they had to do and on making sure that the pictures were understood, that the right word was associated with each illustration. Some of the subjects from Class 5b did not appear to understand what they were supposed to do till halfway through the first listening. Where this was obviously the case the test was repeated after not too long an interval, and the results of the first test were not used. To have undertaken such a procedure with even younger children would have taken a long time, and may have produced no satisfactory result. It is for example very difficult to change a child's mind when once he has made it up. During the period when recordings were being collected of utterances of the individual words on the picture-cards, many of the Nursery children interpreted these pictures in a highly individualistic way, seeing the BOW as a whip or a mouth, the MOUTH as a boat, the VAN as a bus and so on, and no amount of persuasion would convince them otherwise. Even when the CAT was correctly

identified as a cat, or the TOWER as a tower, the word that was uttered was more likely to be a different lexical item from the one desired. Thus "castle" for tower, "skinny" for thin, or "pussy" for cat, "puffer-train", "choo-choo train" for train. Under these circumstances Nursery children were not tested for speech-sound discrimination.

1.4 Conduct of a 'Listening'

The children listened to the recordings one at a time, as they were played on a tape-recorder, through headphones, while the tester listened in through another pair of headphones. With younger subjects it was ensured that the child had heard the two words of the appropriate minimal pair at least once: the tester showed the child the two picture-cards and spoke the two words. Then the recorded word was played to the listener through the headphones, and he or she was asked to indicate, by pointing to one card or the other, which word had been heard. This choice was recorded by the tester as right or wrong.

Usually the children came into the testing-room in pairs, and while one was doing the test the other would be asked to participate by turning over the cards. This helped the children to feel less nervous, even if it did not actually expedite

the conduct of the test. As was seen above, the majority of subjects did two tests, so that in the second listening the words and picture-cards were more familiar. This appeared to have little effect on the choices made - though no child listened to the same tape twice - or on the final results. It did, however, speed up the process of testing

2.1 Scoring Methods

Two types of score were obtained from this test, one relating to the ability of listeners to discriminate speech-sounds. Variables to be considered in relation to this score - a standardized score out of 20 - are age of listener and age of the speaker whose tape-recorded voice was used in the test. The second type of score pertains to the relative difficulty that each word-pair caused to listeners. Two types of result were obtained in this connection. On the one hand word-pairs can be listed in an order of difficulty to children of all ages. On the other hand certain pairs can be isolated whose scores decrease significantly with age, indicating that the older children in this study found them less difficult to discriminate than younger ones. These 'raw' scores may also be broken down to give some measure of the intelligibility of each utterance of the 6 tape-recorded speakers to the 20 children who listened to it.

2.2 Score of Discrimination Ability

Of the 23 items in the test it became clear as the test proceeded that the pairs BULL - BALL and HILL - HEEL were homophonous pairs within the Cockney system of phonology. An exception was perhaps Trevor's HEEL (See below, 3.1 vi but even on this item, at no place did the score rise above a level which could be expected from random choice or guessing. Even if Trevor's pronunciation of this word could be said to be nearer RP than Cockney, it was interpreted by other children as being homophonous with HILL, as would be the case with a Cockney speaker's pronunciation of the word. The scores for BULL - BALL are in some places negatively significant, that is, although the speaker uttered his realization of the word BULL a significantly larger number of listeners interpreted this utterance as BALL. In most places however the choice of listeners is random. With the pair THIN - FIN there was felt to be an unfair premium placed on reading ability and on size of vocabulary. The illustration for FIN did not suggest this word so much as 'Fish' (See Appendix C). Young children may not even have the word 'fin' in their vocabulary, and when confronted with a decision between two words so nearly homophonous would be expected to choose the more familiar word, even if they have just been told what the

two pictures 'mean'. The illustration for THIN, a man with a long scrawny neck (Appendix C), is much more striking than the section of a fish on the other card. There is the added consideration that Tape 5 did not include a recording of one of this pair of words. Only in the score for Tape 3, where the speaker articulates a very well-defined [θ] for THIN, does the choice of listeners rise above the guessing level (that is, more than two standard deviations from a chance or random result - in this case 50%) to as much as 15. These three pairs are not then considered to be satisfactory means for assessing speech-sound discrimination ability, and are eliminated from this core.

Having eliminated ^{these} unsatisfactory word-pairs we arrive most conveniently at a list of 20 items. By giving each listener one point each time an item listened to is correctly identified in contrast to the member of a minimal or near-minimal pair a score is obtained, out of 20, of the listener's speech-sound discrimination ability. In most cases the desired response by the listener was the first member of each pair as presented in Table 7. Where the second item was the word used as stimulus an adjustment has been made, so that Table 7 and Table 8 show for each word-pair the number of times that one item from that pair was correctly identified, followed

by the number of times that the recorded utterance of the first word was confused with the second word. In three places a deviant articulation by a speaker, whether accidental or systematic, caused a confusion that it was felt should be compensated for, lest otherwise a fair measure of speech-sound discrimination be unduly distorted. So MOUSE - MOUTH in Tape 3, where the first item was realized ['maʊθ], and WING - RING and OWL - WHALE in Tape 5, where the first item in each pair is realized respectively as ['wɪŋ] and [ə'wɔːl], are ignored so far as the standardized discrimination score is concerned, though account is taken of them below.

Results

Table 5 shows the scores out of 20 for all the children who took part in this test, arranged by age-group or class of listener, and by age of speaker. Table 6 shows the mean scores and standard deviations for each of the sub-groups of 4 within each class who listened to the separate tapes, and gives the total means for boys and girls of each group, and for all children. The following results emerge from these figures:

- a a) The overall percentage of error for all listeners to all tapes is 33.8%.

- b) There is a marked increase in speech-sound discrimination score for each year-group as age increases. This is significant over the whole age-range at the .5% level ($\chi^2 = 77.45$).
on 5 d.f.
- c) When scores are considered in terms of which of the 6 speakers have been listened to - groups (i), (ii), (iii), (~~iv~~^{iv}) (v) and (vi), listening respectively to Tapes 1,2,3,4,5 and 6 - there is also an overall increase with age in scores. The increase is significant at the 1% level for groups (i), (iii) and (iv), for which $\chi^2 = 38.25$, 22.73 and 16.48 respectively. It is significant at the 5% level for group (ii), where $\chi^2 = 9.91$, and approaches the 5% level for group (v). The increase is less noticeable for group (vi).
- d) When the scores are now considered by age-group, so that the variable is now the age of speaker rather than of listener, there is a slight increase in scores as this age rises. This never attains the 5% level of significance, although approaching it in the case of the three oldest groups, Classes 1,2 and 3. In fact the highest scores generally are found among those children of all ages who listened to Tape 4 (Paul Scally).
- e) If however the 5 groups of listeners corresponding to 5 age-groups are divided into three older classes and three

Table 5.

Discrimination Scores of 30 Groups of 4 Children each,
Divided into Groups by Age of Listener and Age of Speaker
Listened to. Scored out of a Maximum of 80 for Each Group.

Speakers: Listeners	(i)	(ii)	(iii)	(iv)	(v)	(vi)	Total
Class 1	74	73	70	73	67	64	421
Class 2	76	72	73	75	65	71	432
Class 3	73	67	69	68	62	62	401
Class 4	66	64	69	68	61	66	394
Class 5	52	61	53	59	54	59	338
Total	341	337	334	343	309	322	1986

Table 6X.

Mean Scores and Standard Deviations for Each of the 30 Groups of Listeners to 6 Speakers, with Mean Scores and Standard Deviations for Girl and Boy Listeners.

Speakers: Listeners	(i)	(ii)	(iii)	(iv)	(v)	(vi)	Girls	Boys	Total
Class 1 (s.d.)	18.5 1.3	18.3 2.2	17.5 1.3	18.3 1.7	16.8 1.5	16 2.2	17.8 2	17.3 1.7	17.5 1.8
Class 2 (s.d.)	19 0.8	18 1.8	18.3 1	18.8 1.3	16.3 1.7	17.8 1	18.3 1.4	17.6 3	18 1.5
Class 3 (s.d.)	18.3 1	16.8 2.2	17.3 1	17 0.8	15.5 2.1	15.5 1	16.3 1.8	17.2 1.3	16.7 1.6
Class 4 (s.d.)	16.5 1	16 2	17.3 1.5	17 1.6	15.3 1.3	16.5 1	16.3 1.8	16.6 1.4	16.4 1.4
Class 5 (s.d.)	13 4.2	15.3 2.5	13.3 1.5	14.8 1.5	13.5 3.7	14.8 2.5	14.8 2.8	13.1 2.5	14.7 2.8
Girl Listeners	17.2 2.7	16.8 2.3	16.4 2.7	17.8 2.3	16.1 2	15.8 1.5	16.6 2.3		
Boy Listeners	16.9 3.3	16.9 2.3	17.1 1.6	16.8 1.5	14.9 2.3	16.6 2.1		16.5 2.3	
All Listeners	17.1 2.9	16.9 2.3	16.7 2.3	17.2 1.8	15.5 2.3	16.1 1.8			16.5 2.3

younger ones, as they are in practice in the school, an interesting comparison can be made between their scores obtained by listening to different speakers. When the mean score obtained by children in the older group (or 'Juniors') listening to speakers from the Junior school is compared with the score obtained by Junior subjects listening to speakers from the younger age-group (or 'Infants'), there is a highly significant difference, significant at the .5% level ($t = 2.99$) in favour of the group listening to its peers. This difference is not observed in the Infant group, where those listening to Junior speakers show only a slight gain over those listening to Infant speakers. Thus:

		MEAN SCORE	STANDARD DEVIATION
JUNIORS	listening to Juniors	17.97	1.46
	listening to Infants	16.86	1.76
INFANTS	listening to Juniors	15.3	2.3
	listening to Infants	15.2	2.73

These results may be seen as a confirmation of the suggestions of Piaget (1926) and M.E. Smith(1926) that young children do not show much sensitivity to the speech of their peers. This sensitivity appears to increase from the age of around 7 years, the age when children pass into the Junior school.

f) Five of the boys whose speech was used as the basis of the test were asked to listen to themselves on the Tapes prepared from their utterances. Their scores are compared with the mean score of their own age-group. Although all these scores are slightly higher than the mean for their age they are still well within the 95% confidence limits of the mean (calculated as $\bar{x} \pm 1.65 \text{ s.d}$ for a one-tailed test)

Speaker	Score	Mean Score of Age-group	s.d	1.65(s.d)
1	20	18.5	1.3	2.14
2	19	18	1.8	2.97
3	18	17.25	.86	1.42
4	19	17	1.63	2.7
5	14	13.5	3.7	6.1

Thus there cannot be said to be any significant difference between a speaker's discrimination ability on his own voice, and the same ability of other children of his age.

g) There is no significant difference between the performance of boys and girls on this test, though it may be that boys are slightly favoured in this test by the use of only boys' voices as listening matter.

3. Scoring of Individual Word-pairs

3.1 Analysis of Speakers' Tapes

Each tape consists of 23 utterances repeated, with the exception of Tapes 5 and 6, which omit the pairs FIN - THIN and JANE - CHAIN respectively. The utterances on these tapes were presented to 20 listeners each, and can thus be scored out of 20 for the number of times they are correctly identified. Completely random choice, if the listeners guessed all the time, would give a score of 10, and a score is regarded as being significant at the 5% level if it is 1.96 standard deviations away from this figure. In other words a score of 15 or more is significant; a score of 5 or less is negatively significant. At each age-level four subjects listened to each tape. In the following sections errors may be shown for each group of 4 listeners, starting with the oldest listeners. Thus for Paul Snellin BOW - BOWL may have the following distribution of error: 1:1:2:2:3, indicating increasing error among younger listeners.

1 Tape 1 (Ian Macartney)

3.* BLUE - Balloon. Score 12:8. [b]æ^ə

It is hard to find a reason for the low score on this item

* Word-pairs are numbered as in the list in Tables 7 and 8.

not only in this recording but in all others except Tape 3. Ian's vocoid is not especially nasalized, nor is there much of a vocoidal interval between /b/ and /l/. Final /n/ in Cockney is more often than not weakly articulated if at all, and may be realized as no more than a sort of nasalized tailing away of the vocoid. It may be that recognition of final /n/ is relatively late in being mastered by the child. Most mistakes on this item were made by younger listeners, with a distribution of error 0:1:2:2:3

5. TAIL - Tower ['t^hæwə]. 12:8

/æ/ here is a pronounced, one could say over-pronounced, vocoid glide, with some lip-rounding in the later part, but followed by an extra-syllabic short glide to centre. This is probably the result of a very emphatic articulation, but whatever the cause it produces a form which is obviously liable to be confused with /'tæ:/ or /'tæ:ə/. Mistakes are ~~evenly~~ distributed through all ages - 3:1:1:3:0.

7. TIE - Toy ['t^hɔɪ]. 13:7

The starting-point of the vocoid glide is raised from fully open, though not perceptibly rounded.

12. FAN - Van ['fæn] 11:9

Initial /f/ is clearly voiceless in this utterance, indicating

that any confusion between the fortis - lenis phonemes /f/ and /v/ is a result of perceptual confusion on the part of the listeners rather than a reflection of articulatory imprecision on the part of the speaker. It is probably the prevalence of devoiced segments for /v/ rather than voiced segments for /f/ that cause the confusion.

18. PILE - Pie ['p^haɪ^ə] 16:4

The vocoid here is a nearly pure monophthong, with raising and rounding only at the very end of the word. This is still sufficient to identify final /l/ for most listeners.

20. THIN - Fin ['θɪn]. 13:7.

The opposition of /θ/ and /f/ is one of the hardest for English speakers to distinguish without visual clues (cf. Miller and Nicely 1955). Even though Ian's /θ/ is well-articulated the level of choice is not significant at the 5% level.

21. HEEL - Hill ['hɪl]. 10:10.

The score indicates completely random choice.

22. BULL - Ball ['bɔɔ]. 3:16

The score only totals 19 because Ian himself could not say which word he was hearing. The score is negatively significant, and can perhaps be explained quite simply as the result

of the greater familiarity of city-dwellers with balls than with bulls.

11 Tape 2 (Tony Simcock)

4. PAN - Pound [^hpæn]. 6:14

A high proportion of mistakes on this item demonstrates the possibility of confusion of /æ/ and /æ:/. The vocoid quality here is somewhat centralized and lax, which may have led listeners to suspect that the vocoid was not /æ/, rather than to a positive identification with /æ:/. The vocoid is also rather shorter than is usual before a nasal consonant. The acceptance of a form with no final /d/ as one that could be PAN or POUND (the score is within the probability limits of random choice) may be some reflection of Cockney tolerance of the omission of final alveolar plosives (see III,5.3 v) in consonant blusters.

7. TIE - Toy [^stɔɪ]. 15:5.

A closer starting-point than in the utterance of Ian's above probably accounts for a score significantly outside the limits of random choice.

11. BOW - Bowl ['bəʊ] 15:5.

The initial element of the diphthong is retracted from the norm, and the final element is rounded, which may have caused confusion to some listeners, though not a significantly large proportion.

12. FAN - Van ['fæən]. 9:11.

Cf. a similar score for Ian, above.

20. THIN - Fin ['θɪn] 13:7

Both Ian and Tony produced a clear dental fricative on this item, but neither utterance was identified as THIN by a significantly large proportion of listeners. This indicates a perceptual confusion among listeners rather than imprecise articulation by speakers. It is curious to note, however, that all four listeners from Class 5, the youngest group in this test, identified the utterance as THIN. This was probably due as we have suggested to the striking illustration provided for this item.

22. HEEL - Hill ['hi:l]. 12:8.

Again listeners from Class 5 were unanimous in choosing the illustration to HEEL for this utterance. Older listeners were less decided.

iii Tape 3(Paul Harmon)

Throughout this recording Paul used a very clear and emphatic though somewhat lugubrious sounding style of delivery.

Apparently however his usual style of speech gives the impression to his teachers of being rather muffled and indistinct. One cannot be sure how this might affect children who knew him and were accustomed to his normal style of speaking before listening to this tape. They may have expected to hear something very different from what they did hear.

4. PAN - Pound ['phæ:n.]. 16:4.

A very clear and emphatic utterance, with a longer than usual vocoid, seems to have made identification relatively easy.

5. TAIL - Tower ['tʰæ.əɪ]. 19:1.

Only from this speaker do we find a final /l/ with lateral realization. This appears to make identification^{easy} for the listener.

7. TIE - Toy ['tʰaɪ] 14:6.

The vocoid is not raised or rounded to any noticeable degree, yet recognition errors are distributed quite evenly through the age-range of listeners.

10. MOUSE - Mouth ['mⁱəθ] 6:14.

The /s/ of MOUSE is a dental fricative, which is also found in the same speaker's THIN. Even with the scores reversed - treating the utterance as "Mouth" - error is random. Those who did identify the utterance as MOUSE may have done so because they knew Paul to be a lisper, or because they would expect to hear ['mⁱəf] for "Mouth".

12. FAN - Van. ['fæ:n] 10:10.

The fricative is clearly devoiced, yet the score is completely random.

17. CUP - Cap ['k^xa²p^h] 6:14.

Of 8 boy listeners, all heard this as "Cap". The 12 girl listeners were divided 6 - 6. This difference can hardly be thought meaningful. The utterance is no more like "cap" than the other 5 utterances of CUP, and this is the only place where the sexes are so sharply differentiated.

18. PILE - Pie ['p^ha:^t] 15:5.

The velar closing movement at the end of an otherwise unglided vocoid is not very marked, but is sufficient nevertheless to ensure positive identification of /a:l/ in distinction with /aj/.

19. CHIP - Ship [¹ʃɪ²p^h].12:8.

In the absence of the plosive component of the affricate it is perhaps surprising that this was not more positively identified as "Ship". It may be due to the alveolo-palatal nature of the fricative that listeners avoided identifying it completely and without reservation as "Ship".

20. THIN - Fin [¹θɪ.n]. 15:5

The dental fricative is a little exaggerated, with a little splutter. It may be because they knew this speaker that Paul's own peers and listeners from the class below identified the utterance correctly

iv Tape 4 (Paul Scally)

Many of the emphatically-delivered utterances in this tape have a forms associated with dialectal features of speech. TIE, for example, has a triphthongal vocoid [¹t^sɑ^vɪ], while /n/ in CHAIN, PAN, is realized, unusually for a boy, by the ingressive [ɲ]. This suggests once more that the child of infant-school age does not have the same awareness of formality in social situation and in speech-forms as an older child might have.

1. CAP - Cat [¹k^ɾæ²] 9:11.

Whereas older speakers realized final /p/ as a bilabial plosive

with aspirated release in this word, Paul replaces it with the glottal stop - a segment associated with less formal speech for older speakers. This obviously leads to confusion with the phoneme most frequently associated with [ʔ] - /t/. It is noteworthy however that there is no positive identification of this utterance as "Cat"

4. PAN - Pound ['pʰæ:d̥] 14:6

Most listeners hear this as PAN probably because of the absence of any audible alveolar release. The score is not however significant.

11. BOW - Bowl ['bəʊ] 11:9

The final element of the vocoid glide is more rounded than is normal for /əw/, which may have something to do with the widespread confusion over this utterance. The distribution of error among listeners - 1:1:2:2:3 - suggests however that this confusion may be due more to younger speakers' late acquisition of the /əw/ - /aw/ contrast than to any peculiarity in Paul's realization of /əw/.

20. THIN - Fin ['fɪn] 9:11.

The fricative is labio-dental, but the score is not very different from the score for correct identification of utterances with a dental fricative.

v Page 5 (Paul Snellin)

This speaker appeared rather nervous during the recording; his voice-quality is variable, and some utterances are hard to classify in either phonetic or phonemic terms. Vocoids in particular may be indeterminate, of a centralized quality, and rather shorter than is usual for isolated utterances of individual words.

3. BLUE - Balloon ['glæü] 14:6.

Replacement of /br/ with /gr/ and /bl/ with /gl/ is a characteristic of Paul's Speech (see V, 4.4 v). This may be expected to throw listeners off balance, though it is noticeable that most errors of identification are made by children in Paul's class, who might have been expected to allow for this idiolectal feature. Distribution of error is 1:1:1:0:3.

4. PAN - Pound ['pʰæn] 9:11.

The vowel quality is more open, more centralized and shorter than the norm for /æ/ before a nasal. The score indicates a random choice by listeners, who could probably find few cues to enable them to identify the vocoid positively as /æ/ or /æ:/.

7. TIE - Toy [dæ't^sɿ] 7:13

The starting-point of the glide here is raised and more

rounded than the norm for /aj/, though not as close as the mature starting-point of /oj/. Rounding of /aj/ for a speaker of this age (5,5) may be a dialectal feature. Some speakers have mistaken the utterance for "Toy", but not a significantly large number.

9. SHIP - Sheep ['ʔɪʔp^h] 16:3

Some listeners commented that this utterance sounded like "sip" or even "sick". Few however had much difficulty in identifying the vowel quality which provides the contrast in this word-pair.

11. BOW - Bowl [ˈb^{o̞}œ̥] 13:7.

The first element of the glide is rather retracted but the end-point is neither rounded nor especially far back. Paul's contemporaries all identified the utterance as BOW.

13. WING - Ring [ˈw^{u̞}ŋ] 7:13.

For this speaker /w/ and /r/ are not clearly differentiated, and here the initial sound in WING is a labio-dental but rounded continuant. More listeners identify the sound as /r/ than as /w/, though the difference is not significant. It may be that labio-dental articulation is felt to be a feature of /r/, and that older speakers have expected to hear this type of segment for /r/ from a younger speaker.

14. CHAIN - Train [^h'tʃæɪn] 15:5.

Older children had no trouble in recognizing the palato-alveolar affricate, even in this palatalized form. Some younger listeners however failed to distinguish /tʃ/ and /tr/, a distinction which is relatively late to appear in speech. Distribution of error is 1:0:0:2:2:

15. OWL - Whale [ə'wɔɪ] 4:16

Paul had not mastered the grammatical rule governing the forms of the indefinite article. Instead of using 'an' before OWL, he used 'a' and introduced an intrusive /r/ between the two vowels - /ə'rɔɪ/. However, since for mature /r/ he has here used the labio-dental rounded [w], many listeners, and a significantly large number of them, heard the utterance as "Whale". It is interesting to see that [w] is here identified as /w/, but in item 13 above it is generally heard as /r/ and /w/ equally. In the present case of course mature speakers would not expect to hear an /r/

19. CHIP - Ship [^h'tʃ:θɪp^h] 13:6.

The fricative part of /tʃ/ is a fricative glide, the first part of which is sustained for so long that many listeners apparently felt that it was not part of the word being

uttered, and ignored it. All Paul's contemporaries in Class 5 recognized this as CHIP. Distribution of error is 2:1:2:1:0.

21. HEEL - Hill [ə'wɪl] 11:9.

The quality of this particular recorded utterance is rather poor. Many children appeared quite mystified during their listening by the combination of this and another intrusive [w].

vi Tape 6 (Trevor Rees)

On some of these items the recording is somewhat distorted, as the speaker tended to lean very close to the microphone and attempt to yell into it. Other items however are given a very careful and full enunciation. Vowels for example are sustained and may have vigorous glide. This may be partly a result of Trevor's more Standard English family background (see IV, 11), but could also be due to his being at a stage where phonological forms are relatively unreduced.

1. CAP - Cat [ə'kʰaʔpʰ] 14:6.

The lack of any audible release of the final bilabial plosive leads to the construing of this plosive as /t/ by some older listeners. Younger groups seem to have had less

difficulty - distribution of error is 3:0:1:1:1. The open front vocoid caused no comment or difficulty.

4. POUND - Pan ['p^hʌʊnd] 19:1.

This item is probably nearer to Standard English than the Cockney norm, particularly in the rounded end-point. BOW, which also has a score 19:1, may also be said to be nearer to RP, in its higher starting-point and more rounded end - ['be.ʊ]. It may not be the more standard phonetic form of these utterances that is crucial for the listeners, but the extent and the distinctiveness of the vocoid glide. In TAIL, which also scores 19:1, the realization ['t^hæɪɹʊ] could not be said to be RP - like. It is more likely to be a product of the infant's tendency to give a careful and fully articulated form to words whose phonological form he has just acquired. In the case of TAIL the disyllabic form /'tæjow/ given by Trevor is over-carefully produced.

7. TIE - Toy ['t^hɔɪ] 9:11.

The first element of the glide is raised and slightly rounded. The length of the vocoid is less than in Trevor's other utterances on this tape, and the extent of vocoidal glide is less than normal for /ɔɪ/, which may have prevented listeners from identifying it as either TIE or "Toy".

12. FAN - Van ['fan] 9:11

The recording is slightly distorted, which may have made identification harder for some listeners. The vocoid is of a very open quality but relatively short, especially in view of its position before a final nasal consonant. However the fact that most errors are found among younger children indicates that discriminatory difficulties with this item are more due to perceptual confusions on the part of listeners than to articulatory obscurity on the part of the speaker. Errors are distributed 0:1:2:4:4.

13. RING - Wing [v:ɪŋ] 20:0.

A very long labio-dental /r/ gives an easy clue to the identification of this item.

14. CHAIN - Train [ə'ʔæɪn] 12:8

The first sound in CHAIN is an alveolo-palatal fricative, but this does not seem to trouble older listeners. Younger subjects however show some confusion. Mistakes are distributed 1:0:3:2:2.

18. CHIP - Ship ['ʔɪ²p^h] 4:16.

As was seen in CHAIN, Trevor has evidently not mastered the affricate /tʃ/. Here the choice of "Ship" is significant at the 1% level

20. THIN - Fin ['θɪn] 12:8.

The /θ/ is quite a clear dental fricative, but this has no apparent effect on the score.

21. HEEL - Hill ['hi:l] 12:8

As with TAIL, Trevor gives HEEL disyllabic form /'hi:jə/. This is still not well recognized as HEEL except by the 5-year old group. Errors are 1:2:3:2:0.

22. BULL - Ball [ə'bu:l] 13:7.

Though the score for BULL on this item is not itself significant, yet the difference between this and scores for BULL on other tapes - 3,7,6,6,5 - is just significant at the 5% level ($\chi^2 = 13.03$). It is just possible that the closer starting-point and longer first element for the diphthong may explain this difference. Though BULL and "Ball" are homophones /'bɔ:l/ before /+/, they may be contrastive before a vowel. Thus "a bull in a field" /ə'bulɪnə'fi:ld/ and "a ball in a field" /ə'bo:lnə'fi:ld/.

It emerges from this analysis of the tapes on which the test is based that many of the errors made by listeners must be due to some cause other than the articulatory shortcomings of

Table 7. Correct Identifications and Errors of Discrimination Made on 23 Word-pairs by 6 Groups of Children Listening to the Recorded Utterances of 6 Speakers.

Listeners:		(1)	(11)	(111)	(v1)	(v)	(v1)	Total Errors (out of 120)
Word-pairs		(v1) OF 20						
		SCORES OUT						
1	CAP CAT	17:3	17:3	18:2	9:11	9:11	14:6	36
2	PIN PEN	19:1	18:2	18:2	18:2	17:3	14:6	16
3	BLUE BALLOON	12:8	14:6	18:2	15:5	14:6	15:5	32
4	PAN POUND	15:5	6:14	16:4	14:6	9:11	19:1	41
5	TAIL TOWER	12:8	19:1	19:1	18:2	18:2	19:1	15
6	BED BREAD	20	20	19:1	19:1	18:2	20	4
7	TIE TOY	13:7	15:5	14:6	19:1	7:13	9:11	43
8	BACK BAT	19:1	20	20	18:2	19:1	17:3	7
9	SHIP SHEEP	18:2	20	16:4	18:2	17:3	19:1	12
10	MOUSE MOUTH	19:1	19:1	6:14	20	17:3	20	19
11	BOW BOWL	19:1	15:5	19:1	11:9	13:7	19:1	24
12	FAN VAN	11:9	9:11	10:10	15:5	12:8	9:11	54
13	WING RING	17:3	16:4	18:2	19:1	7:13	20	23
14	CHAIN TRAIN	18:2	18:2	17:3	19:1	15:5	12:8	21
15	OWL WHALE	20	19:1	19:1	20	4:16	18:2	20
16	BAG BACK	18:2	20	20	20	18:2	20	4
17	CUP CAP	19:1	20	6:14	18:2	17:3	15:5	25
18	PILE PIE	16:4	16:4	15:5	17:3	18:2	19:1	19
19	CHIP SHIP	20	20	12:8	20	13:7	4:16	31
20	THIN FIN	13:7	13:7	15:5	9:11	-	12:8	38
21	HEEL HILL	10:10	12:8	12:8	14:6	11:9	12:8	49
22	BULL BALL	4:16	7:13	6:14	6:14	5:15	13:7	79
23	JANE CHAIN	19:1	16:4	20	16:4	18:2	-	11

the six speakers. Certain errors can obviously be attributed to the immaturity of Trevor's and of Paul Snellin's phonological systems, for example Trevor's [ʔi²p^h] for CHIP and Paul's [ə'wær] for OWL. However, FAN is articulated with a voiceless initial fricative by all six speakers, yet there is still a high proportion of error on this item, and ~~there~~ must be some perceptual confusion among listeners to account for this. We may now proceed therefore to examine the scores of each word-pair, to determine its relative auditory discriminability within this test.

3.2 Overall Scores of Test Items

With the exception of THIN - FIN (missing from Tape 5) and JANE - CHAIN (missing from Tape 6) each pair of words was presented for judgment 120 times. The other two pairs were presented 100 times each. Each recorded utterance was listened to, as we have seen, by 20 children in each of six groups comprising listeners of all ages. These scores out of 20, which were discussed in the preceding section, can be seen in Table 7 .

In each of the five age-groups, 24 children listened to and made judgments on each word-pair. Each item can thus attain

Table 8. Errors of Discrimination Made on 23 Word-pairs by 5 Groups of 24 Children Each, at
5 Age-levels

Listeners:	Class 1	Class 2	Class 3	Class 4	Class 5	Total Errors	Percentage of Error	χ^2	Level of Significance
Word-pairs.									
1 CAP CAT	7	5	9	6	9	36	30	2.5	Not significant
2 PIN PEN	1	2	4	0	9	16	13	28.3	1%
3 BLUE BALLOON	3	4	5	7	13	32	26.7	17.4	1%
4 PAN POUND	5	6	11	7	12	41	34.7	8	Not sign.
5 TAIL TOWER	3	1	1	6	4	15	12.5		
6 BED BREAD	-	-	-	1	3	4	3		
7 TIE TOY	5	11	8	8	11	43	36	6.5	Not sign.
8 BACK BAT	2	1	1	1	2	7	5.8		
9 SHIP SHEEP	1	1	1	5	4	12	10		
10 MOUSE MOUTH	4	3	3	4	5	19	15.8		
11 BOW BOWL	4	3	7	3	7	24	20		
12 FAN VAN	9	3	8	18	16	54	45	27.3	1%
13 WING RING	2	4	3	8	6	23	19	7	Not sign.
14 CHAIN TRAIN	2	1	3	5	10	21	17.5	14.4	5%
15 OWL WHALE	4	5	3	1	7	20	16.7		
16 BAG BACK	-	-	-	1	3	4	3		
17 CUP CAP	5	4	6	4	6	25	21		
18 PILE PIE	2	-	2	5	10	19	15.8	19	1%
19 CHIP SHIP	9	5	7	4	6	31	25.8	3.2	Not sign.
20 THIN FIN	12	7	11	6	2	(out of 100)	38	14.8	5%
21 HEEL HILL	12	10	14	9	4	49	40.8	10.3	Not sign.
22 BULL BALL	14	11	18	20	16	79	65.8	7.6	Not sign.
23 JANE CHAIN	1	-	4	-	6	(out of 100)	11	14.7	5%

a score out of 24 (20 for JANE, THIN) within each age-group, a score representing the ability of that age-group to discriminate the presented item from the other member of the word-pair. A score of 17 or more, or of 7 or less, is significant at the 5% level (for JANE and THIN, scored out of 20, the limits are 15 or more and 5 or less.). Table 8 presents the number of times that each age-group identified each of 23 items correctly, and the number of times incorrectly, the total errors out of 120 or 100, and this figure as a percentage. Where there is a marked decrease in the number of errors in a word-pair with an increase in age of listeners, the significance of this decrease is calculated.

Results

Two main types of result can be gained from the figures in Table 8. On the one hand there are word-pairs which cause equal difficulty in discrimination at all ages. On the other hand there are pairs whose discrimination improves or, in one case declines, with the age of the listener.

a) The items that gave most difficulty to all speakers, in order of difficulty, are:

1. BULL - BALL (65.8% error)
2. FAN - VAN (45% error)
3. HEEL - HILL (40.8%)
4. THIN - FIN (38%)
5. TIE - TOY (35.8%)
6. PAN - POUND (33.3%)
7. CAP - CAT (30%)
8. BLUE - BALLOON (26.6%)
9. CHIP - SHIP (25%)
10. CUP - CAP (20.8%)

b) Significant improvements in score were found with the pairs PIN - PEN; BLUE - BALLOON; FAN - VAN; PILE - PIE. These increases were significant at the 1% level. The pairs CHAIN - TRAIN and JANE - CHAIN also showed increases in score, which were significant at the 5% level. Increases were also found in the pairs CAP - CAT; PAN - POUND; TIE - TOY; WING - RING, though these did not attain the 5% level of significance.

c) A startling result is an increase in the amount of error recorded in the discrimination of THIN - FIN and HEEL - HILL with the age of listener - a tendency contrary to that noted with other pairs, and contrary to the results in 2.2 above

The superior score for THIN - FIN among younger listeners is in fact significant at the 5% level. This can perhaps be explained, along the lines suggested in 2.2 above, as due to the non-linguistic factor of the attraction of the illustration to THIN to younger children, and it may be that a similar factor is at work in the choice of HEEL among younger listeners. It may be that the tester took more time and care explaining to the 5-year olds what the picture for HEEL was than he did with HILL, or that he pointed out to them that high heels were worn by the children's mothers, an association that HILL could not have. If some such explanation is not valid then this is a truly surprising result. The pair CHIP - SHIP had more errors of discrimination among older children than among young, though these differences are not significant. An analysis of errors of identification made by listeners from Class 1 shows that they all occurred among the groups that listened to younger speakers - Tapes 3, 5 and 6. We have seen in Trevor's recording that errors of identification in relation to Tape 6 are directly due to the speaker's misarticulation of CHIP as [$\text{'}\phi\text{i}^2\text{p}^h$].

4.1 Difficulties and Shortcomings of the Test

1 Variables

In the course of this test it became clear that there were a

great many variables that the design of the test had not taken into account. The ages of listeners and of speakers were controlled variables, but knowledge of the speaker, knowledge of the vocabulary item being spoken, ability to read the printed word on the card, ability to recognise the illustration, preference for one picture over the other, the clarity of the speaker's voice, are all variables that may have influenced the results of this test one way or another. In this light, any results that have been achieved must be considered as no more than suggestive of the way in which future research might develop. Even the most commonly confused pair of words BULL - BALL may be contrastive for some listeners, as was seen in connection with Trevor's recording of BULL (3.1vi above).

11 Vocabulary

Only a limited number of word-pairs was tested. It will obviously not be possible in a test of this kind to obtain judgements on all the possible combinations of words in which minimal oppositions are operating. One has to use words which are reasonably likely to be familiar to most of the younger children, and if a part of the subjects used are at a pre-literate stage the words must be those which lend

themselves easily to being depicted. FIN was probably not of this type.

Of the words which were known to the children and were easily illustrated, some were better-known and more widely used than others. BALL was probably far more familiar for these city-dwellers than BULL. The illustration to WING was quite often mistaken for a Red Indian head-dress, while the other picture in that pair, RING, was seldom mistaken for any other object.

Even when the picture was recognised as the object it was supposed to be, a word other than that intended was quite frequently elicited. This difficulty applied more at the stage of collecting recorded words than in the listening stages, but did raise doubts as to how far the children understood the two words between which they were supposed to be making a choice. SHIP for example was commonly said to be a "boat", then there was "hat" for CAP, "lamb", "dog" or "doggie" for SHEEP, "bus", "car" or "lorry" for VAN. Most frequently it was found with the younger children that they would use a disyllabic or compound word in place of the monosyllable that the pictures were intended to elicit. Thus,

"skinny" for THIN, "necklace" for CHAIN, "pound-note" for POUND, "frying-pan" for PAN, "postman's hat", "German hat" and "shopping-bag" for CAP. Alice Descoeudres (1930) had similar problems in trying to assess children's vocabulary by means of pictures (p.60 - 70).

iii Variation in the Recordings

a) The actual recording quality varied. Some boys had louder voices than others, or sat nearer the microphone when they spoke. The youngest children were not recorded alone but in pairs, and although the tester tried to restrict them to talking one at a time, the voice of another child would break in from time to time. Some recording sessions were plagued by passing lorries or clatter from the school kitchens close at hand.

b) The voices of the speakers varied in quality. Ian had a good clear voice, Tony Simcock (Tape 2) was a little more muffled. Paul Scally (Tape 4) was occasionally adenoidal and Paul Snellin (Tape 5) was tremulous as well as muffled. Paul Harmon (Tape 3) was emphatic and lugubrious in his delivery, while Trevor (Tape 6) was highly excited and tended to shout into the microphone in a high-pitched voice.

c) The degree of regional accent in the speakers' voices also varied. Trevor for example comes from a home where he would hear mainly Standard English spoken, and although he had been in the ^Nursery class for a year at the time of this test, he had probably not reached the maturational stage at which his speech assimilates to that of his peers. Paul Scally, on the other hand, had strongly dialectal features of speech in his recording, features which may have been inhibited among older speakers by an awareness of a certain degree of formality in the recording situation.

CHAPTER VII - CONCLUSIONS

1.1 Developmental Stages in Phonology

It was seen in Chapter II that the child's basic linguistic competence is generally regarded as having been acquired by the age of 3 to 4 years (cf. II, 3.3 iv) - the stage at which this study begins to consider children's speech. Consideration of the youngest informants in our study supports a conclusion of this kind in the area of phonology. Although many confusions between phonemes are to be found in the speech of the youngest informants such as Mark, Peter, Trevor, Fern, yet the great majority of the phonemic oppositions of mature speech, as defined in Chapter III, do occur at some time or another in their speech. Development throughout the period 3 to 9 years takes place in the maturing of articulation and in the acquisition of the transformational rules requisite for the production of a mature performance. Three main stages can be discerned in this development, and these correspond not so much to the three stages on which the chapter-division of the present thesis is based as to the traditional age-divisions in the British Primary Educational system. These are: a) Nursery, or perhaps more accurately Early Nursery - up to $4\frac{1}{2}$ years approximately. b) Late

Nursery and Infants - 4 to 7 years approximately c) Junior - 7 years and over.

1.2 (Early) Nursery Speech

- i) Although competence is established at this age, phonological performance is still some way from the mature model. Many confusions occur in speech between phonemes near in quality, such as the short vowels /i/ and /e/, /e/ and /æ/, /æ/ and /a/, or the fricatives /s/ and /ʃ/, the affricates /tʃ/ and /tr/, /dʒ/ and /dr/
- ii) Certain prosodic characteristics can be attributed to the speech of children at this phase of development. These include dentalized and palatalized allophones of the mature alveolars - /t,d,s,z,n/-, the widespread use of open and, most typically, extended juncture at syllable-boundaries, a generally slower rate of enunciation and lengthened allophones of recently-acquired phonemes and phoneme-clusters.
- iii) Words are produced in relatively unreduced forms. Vowels tend not to be weakened and consonants not to elide in any regular way. These forms seem to be, in other words, very close to the forms in which the words are acquired in the child's competence.

- iv) Many of the phonotactic features of mature connected speech are absent at this age. Segments in neighbouring syllables are rarely coalesced across syllable-boundaries. Children may not yet have learnt the rules governing features such as the alternation of diphthongs /e/ and /ɔə/ before consonants with /ən/ and /ði/ before vowels.

1.3 Late Nursery and Infant Speech

- i) During this period the outlines of phonemes or 'phoneme-boundaries' become more clearly defined. There is less frequent confusion of vowels; alternation of short vowels is regularized, such that /e/ may replace /æ/ and /u/ may replace /o/, but not vice versa. 'Ambiguous' segments, which may have occurred in Nursery speech for more than one mature phoneme in different words - such as the fricatives [ʃ], [ʒ], for both /ʃ/ and /s/ - tend to disappear, or to occur only in places where there is little or no risk of confusion - such as /ʃ/-like variants of /s/ which occur before plosives, where /ʃ/ may not appear in English.
- ii) Articulation approaches the mature model more closely in this period. 'Nursery' allophones fall out of use, though on the way to a mature articulation a child may for a time adopt articulations which are more complex than the segments

which are being attempted. Such are the double-articulations [fθ] and [vð] for /θ/ and /ð/, the alveolo-palatal [tʃ], [dʒ] for /t/ or /k/, /d/ or /g/, the tense, retracted [ɤ̠] for /s/, the labio-dental rounded [w] for /r/ or /w/. By the age of 7 years articulation is substantially mature, with the exception of /r/, /tr/ and /dʁ/, and possibly some lisping or dentalizing of /s/.

- iii) Speakers become more consistent in the allophones they use, even though these may not be the mature norm. There is less variation in the articulation of one phoneme within an utterance for a normal speaker at this stage than for younger speakers or 'defective' speakers such as Dawn Edmeade in this study (cf. V, 4.1, 4.2 and transcription in Appendix B).
- iv) The transformations turning competence into the performance which is connected speech are mastered during these years. Children learn for example to produce weak forms of vowels, to coalesce phonemes across syllable-boundaries and to alternate different forms of the articles before consonants and before vowels. These can be said to be features of economy in speech, and are associated with an increase in the tempo of speech, a reduction in the proportion of

extended and open juncture at syllable-boundaries.

- v) This is a period during whichm'dialectal' allophones such as triphthongal realizations of /i:/, /e:/, /æ:/, /o:/, /aj/, become more common in children's speech. Similarly dialectal forms such as /'æ:n/, /'jo:n/, /'owf/ "ourn", "yourn", "off" are recorded here, although they are not found elsewhere in this study, either at younger or at older stages.
- vi) During this phase over-compensation is found in some pairs of phonemes, such that /r/ may replace /w/, a phoneme which had replaced it at earlier periods. The replacement of /s/ by /ʃ/ and of /z/ by /ʒ/ appears to be a rather less simply-explained phenomenon; this is confined almost exclusively to the speech of boys.

1.4 Junior Speech

- i) Articulation becomes mature in all respects during this period for the great majority of speakers. The post-alveolar realization of /r/ and close-knit realizations of /tr/, /dr/ are among the last articulations to be perfected. Those children who do not acquire these articulations by the age of 10 or 11 years will presumably retain defective articulation in these respects in later life, unless corrective

measures are taken. Dentalized or dental 'lisped' /s/ is not a persistent feature among any of the older informants in this study

- ii) Differences between the sexes in phonological performance may have started to appear before this period, as in the case of boys who replace /s/ with /ʃ/, or whose speech showed a relatively high proportion of rounded and fully back starting-points of /aɪ/. After 7 years these differences become more regular and widespread. Girls' speech is characterized by prolonged utterance-final syllables, with lengthened vowels and final continuant consonants; by a higher proportion of devoiced and heavily affricated realizations of /d/; by fronting glides in /əw/ ; by non-nasal ingressive allophones [b], [d], in /m/, /n/; and by a high degree of similarity in voice-quality among the girls in the 9-year old group. Boys, on the other hand, have a higher proportion of [ʔ] as an allophone of /t/ in medial position. This is perhaps associated with less prolongation of syllables - what Sivertsen (1960) noticed as a feature of male Cockney speech, and described as 'clipped' delivery, opposed to the women's more 'whining' or 'drawling' style (p.32). Boys also use the voiced alveolar flap [ɾ] more frequently as an allophone of word-initial /ð/.

- iii) Features of economy in speech, such as coalescence, assimilation, weak forms of vowels, continue to be very noticeable at this age. Their presence in speech is perhaps encouraged by the high degree of homogeneity in the Junior peer-group. A 'restricted code' type of expression (Bernstein 1963) may leave many things unsaid, and has a high degree of redundancy.
- iv) Curiously, the change in social attitude which begins to be noticed at around 7 years is marked at the phonological level more by the absence than by the presence of the dialectal features which were found in 5 to 7 year olds' speech. It is presumed that these features come to be confined to non-formal situations as the child grows aware of an increasing range of types of social situation, each requiring a different linguistic approach and a different degree of formality in speech. The 9-year old varieties of speech described in Chapter III are considered to be relatively formal in comparison with speech which might be heard among a group of Junior-school children alone, though not as formal perhaps as speech heard in an 'academic' situation, such as in the classroom, in the course of a lesson.

2.1 Test of Speech-sound Discrimination

- 1) One result of the test of speech-sound discrimination described in Chapter VI is to confirm that the growth of a more social attitude in the child after the age of 7 years is indeed reflected in at least this aspect of linguistic skill. Junior children show a higher degree of sensitivity to the speech of their peers in this test than to that of younger speakers, though this difference in discriminatory ability is not found in younger children.
- ii) The test also indicates that speech-sound discrimination is an ability that increases with age. This improvement is collateral and correlated with improvements in other aspects of linguistic skill. At the younger levels for example there is confusion of the word-pair PIN - PEN. This presumably reflects the late emergence of the /i/ - /e/ contrast in children's speech, from the archiphonemic unit //I//. The results of the test indicate that certain phonemic contrasts may be harder for children to differentiate than for older speakers, while other contrasts will cause equal difficulty in discrimination to young and mature speakers alike.

APPENDIX A - LIST OF SPEAKING INFORMANTS

Diane Allen. Aged 8,11 (Chapter III). 2nd of 3 children

Vivienne Ashmore Aged 9,10 (III) 3rd of 4.

Elaine Baker Aged 9,2 (III) 2nd of 3.

Lindsey Baldock Aged 8,1 (V) 2nd of 3.

Lorraine Beswick Aged 5,0 (V) 1st of 2.

Kathleen Bye Aged 9,2 (III) Only child.

Jenny Carnegie Aged 8,5 (III) 2nd of 3

Kim Chandler Aged 5,8 (V) 2nd of 2.

Philip Chandler Aged 8,10 (III) Brother of Kim.

Deborah Cook Aged 4,6 (IV) Only child.

Janice Cook Aged 6,8 (V) 1st of 2.

Lynn Cook Aged 3,10 ('Lynn I') and 4,5 (IV) Sister of Janice.

Debra Cox Aged 7,5 (V) 2nd of 3.

Carl De'ath Aged 5,10 (V) 1st of 2.

Dawn Edmeade Aged 6,6 (V) A twin, joint 3rd of 4.

Paula Evans Aged 4,3 (IV) 2nd of 2.

Debra Garnes Aged 8,0 (V) 1st of 2.

David Gilbert Aged 8,6 (III) 2nd of 3.

Mark Gillard Aged 3,5 (IV) 2nd of 2.

Tracy Gillard Aged 4,5 (IV) Sister of Mark.

Stephen Glynn Aged 6,10 (V) 2nd of 3.
Robby Goddard Aged 7,0 (V) 3rd of 3.
David Griffen Aged 9,2 (III) 1st of 2.
Paul Harmon Aged 8,2 (VI) 2nd of 4.
Paul Hill Aged 6,11 (V) 2nd of 2.
Anthony Holtum Aged 9,9 (III) 1st of 2.
Nicholas Ifield Aged 5,7 (V) 2nd of 2.
Russell Kilden Aged 8,2 (III) A twin, 1st of 2.
Margaret Knox Aged 4,8 (IV) 2nd of 3.
Janis Lazarus Aged 4,11 (IV) 2nd of at least 2.
David Leigh Aged 4,7 (IV) and 5,7 (V). 2nd of 2.
Jeanette Leigh Aged 9,1 (III) Sister of David.
Ian Macartney Aged 10,9 (VI) Only child.
Teresa McCombie Aged 9,2 (III) 3rd of 4.
Denise McDonnell Aged 6,7 (V) 2nd of 3.
John McDonnell Aged 8,6 (III) 1st of 3, Brother of Denise.
Andrew Marren Aged 4,0 (IV) 1st of 2.
Kathleen Moss Aged 6,6 (V) 1st of 3.
Jackie Newton Aged 9,1 (III) 2nd of 2.
Clifford North Aged 8,1 (V) and 8,10 (III) 2nd of 3.
Carol Otterwell Aged 5,10 (V) 3rd of 4.
Kay Phillips Aged 4,2 (IV) Family size unknown.
Tracy Pollard Aged 7,0 (V) 3rd of 3.

Dawn Price 7,4 (V) 2nd of at least 2.
Denise Rawlings Aged 3,11 (IV) 2nd of 3.
Trevor Rees Aged 3,7 (IV) and 4,9 (VI) 1st of 2.
Sean Rice Aged 5,11 (V) 2nd of 3.
Paul Scally Aged 7,0 (VI) 1st of 2.
Paul Sheekey Aged 5,3 (V) 4th of 4.
Tony Simcock Aged 8,1 (V) and 9,3 (VI) 2nd of 2.
Fern Smith Aged 3,8 (IV) 5th of 5.
Ross Smith Aged 9,3 (III) 2nd of 5, brother of Fern.
Paul Snellin Aged 5,3 (V and VI) 2nd of 2.
Steven Spicer Aged 4,9 (IV) and 5,5 (V). 2nd of 3.
Terry Sullivan Aged 7,7 (V) 2nd of 3.
Karen Threadwell Aged 9,0 (III) 2nd of 2.
Peter Tuckfield Aged 3,6 (IV) 1st of 2.
Shane Webb Aged 5,4 (V) 3rd of 3.
Jill Williams Aged 7,9 (V) 4th of 5.

APPENDIX B - SAMPLE TRANSCRIPTIONS

1. Trevor Rees.

['dʊ. 'wɒθɪn 'aʔpɸ] ['jɛpəi 'wɔ:ksɪn 'nʊmʌs 'dɔuwə. ʔ 'kʰæu:]
 / 'duw 'wɒfɪn 'ap+ / / 'jɛfɪj 'wɛ:ksɪn 'nɔws- 'dɔuwɛ:k 'kæ:ʔ /

"Do washing up." "Yes, she works in (the) house, don't work

['æʊʔ 'æʊmʌʃ, ʃɪɪ, dɔʊnʔ]

/ 'æ:t 'æ:ʃ, ʃɪj, dɔwnt+ /

out, out (of the) house, she don't."

[A'wæɪʔɪnfɔ: ʔ 'dæʔwɔ.] [Aŋ'væɪʔɪnfɔ: 'daʔ, wɛɪn]

/ aɪ'wæɪtɪnfɔ:- 'dætʊn+ / / aɪm' ræɪtɪnfɔ: 'dat, wɛn+ /

"I waiting for that one." "I'm waiting for that one."

[ʔA ʔ 'ŋgɔʔmɔ: 'sAɪʔs, ænfɔ: 'wænə 'dæɪʃ]

/ +aɪʔ 'aŋgɔpmaj 'sajts, ænfɔ: 'wænə 'dæɪʃ+ /

"I, I've got my (sights?) on for one of they."

['sɔb, sɛmpɹɔn, ʃɪɪ 'pəɪʔʰ (sniff) ænɔ: 'gɔʔɔ 'pʰɪʔtʰɪʔɪʔ 'æɪn.]

/ 'sɔb, sɛmprɔn, sɪj 'sajɛt+ ænɔ: 'gɔtə 'pɒttɪt 'ɒn+ /

" ? ? ? ? and I got to put it on."

['ʔŋv, gɔʔə 'vab:ɪʔtʰ] ['kʰəɪpʰə 'wæɪ ɪs 'bɔm, bɔv, beɪʃ.]

/ + 'aɪ(n)v, gɔtə 'ræbɪt+ / / 'kɪj pə 'wæɪ + ɪs 'bɔm, bɔw, bɪʃs+ /

"I've got a rabbit." "Keep away! It's bumble bees!"

['dæɪ, βɜ: 'tʰɪl, jə] ['dæɪdɛ 'bA.ʔjə 'æ.ɸʰ]

/ 'dæɪ, wɪ 'tɪl, jə / / 'dæɪdɛ 'baɪtjə - 'ænd+ /

They will kill you!" "They, they('ll) bite your hand!"

2. David Leigh, Andrew Marren and Peter Tuckfield

- D. ['fçəügə? 'fæi, bɛʃʔs] A. ['ɛni 'wɔ̃n] ['ædə 'li?owɔ̃n 'tʰɛü]
D. /'fjuwgot 'frij, bəwts+/ A. /'əwni 'won+ 'aɟædə 'litowwon 'tuw+/
D. "Have you got three boats?" A. "Only one. I had a little
P. ['ʔnädʔ: 'ʔnä. dɔ̃?ə 'bɪbwən: 'dɔ̃z] A. ['lɪ?eiz 'bigʔɛ]
P. /ʔ(ə) 'nəɟdʔ(ə) 'nəɟdɔ̃tə 'bɪbwənən 'dɔ̃:z+/ A. /'lɪɟz 'bigə+/
D. "One too." P. "And I got a big one indoors." A. "Look, he's
P. ['bɪb 'bɛwʔ] ['bɪɟ 'bɪd 'bigʔ 'bigʔ 'fæ?ɛdʔ]
P. /'bɪb 'bɛwt+ 'big 'bɪd 'big 'big- 'fæted+/
D. "bigger." P. "Big boat. Big, big, big, big fathead!"
A. ['ʔəɪgə? nɛʊ 'fa:ʔtʰ] ['kɔ̃nʔ 'stæ. nd 'aʔpʰ]
A. /+ 'ɪj(ŋ) gotnəw 'fat+ 'kɑ:nt 'stænd 'ap+/
A. "He (ain't?) got no feet. Can't stand up."
P. [ʔə. i 'tʰɑ. nʔ 'stæ. n 'dɑ. ʔpʰ] [ʔəi 'æɪnʔ 'dɔ̃ʔɪʔ 'ɟɪpʰəzɔ̃n]
P. /+ 'ɪi 'tɑ:nt 'stænd 'ap+/ /+ 'ɪj 'æjnt 'dɔ̃tɪz 'sɪpɛzɔ̃n+/
P. "He can't stand up." "He ain't got his slippers on."
D. ['lɔ̃ʔɪz 'fæiʔkʰaʔ, ʔf] P. [ɪz 'dɔ̃ʔɪv 'fæiʔtʰaʔ, ɔ̃m.]
D. /'lɔ̃tɪz 'fɪjkkat, of+/ P. /ɪz 'dɔ̃tɪv 'fɪjttat, of+/
D. "Look, his feet cut off!" P. "He's got his feet cut off."
D. ['ʔɪɪɪgəvʔ 'ɪɪn:ə 'pʰɔ̃n:] ['ɪɪɪɪ, big 'næɟ]
D. /+ 'ɪɪɪgəws 'sɪnnə 'pɔ̃n+/ /'ɪdɪj, big 'næ:+/
D. "Here he goes, in the pond." "Isn't he big now?"
P. ['ämdʔ ɛʔɪn 'bɪdʔə, næʔ] A. [jɛ 'ämgɛʔən 'bigʔə 'tʰəu]
P. /'aɟmdetɪn 'bɪdə, næ:+/ A. /jɛ: 'aɟmgetən 'bigə 'tuw+/
P. "I'm getting bigger now." A. "Yes, I'm getting bigger too."

3. Fern Smith

[luʔ'dæʔsə'sləiç²p¹] ['çri,da,zənʔ'lǎ:ʔkɪm'ɛni'məʊ]

/lut'dætse'slijp+/ /'ʃij,da,zənt'lajk-him'eni'mo:+/

"Look, that's asleep." "She doesn't like him any more.

['kʰuz. ɔri'vænʒə,wəʔ² ʔəi'vænʒə'wæ.ɪ] ['ʔq:] (growling' vdce)

/'kuz-ʃij'ranʒə,wəʔij'ranʒə'wæj+/ /+'a:+/

'Cause, she runs awa- he runs away." "Aah,"

['pyiʔri'ag.ɪɪ] ['luʔtə'dɪs,waʊn] ['ʔAgəʔə'bləʃ.n.]

/'pritij'ag,ɡli+/ /'luttə'dis,wan+/ /+'ajɡotə'bluwn+/

"Pretty ugly!" "Look to this one!" "I got a balloon."

['dæʔsə'ʔælɪ,ɡæiʔ²,hæ] ['ʔælɪ'ɡæiʔ²,æɪ:ə:ʔ² 'däŋə,sɔ:]

? > /'dætse-'æli,ɡæjt,ə+/ /+'æliʃ'ɡæjtə,ænnə-'dajne,so:+/

['ænnə'ʔælɪɡæiʔ²,h.ə.] [wən'a:ædə'dAɪnə,sq: d 'sam.dəi'tʃəd.ɪd

/'ænnə-'æliɡæjt,ə+/ /wən'ajədə'dajne,so:+'samedɪj'troddɪd

"And a alligatore" "When I had a dinosaur, somebody trodded

['Aʊn,pʰɔ: ʔ æniʔ'di.nʔ'bʊæ.ɪʔcʰ ɪʔ,kʰudənʔ² 'ʔəi.vən,ɡæʔ

/'on-,po:ʔænit'dint'bræjk+ +ɪk,kudənt-'ijvən,ɡet'ap+/

on, paw, and it didn't break. It couldn't even get up."

['a²p¹] [lAʔ'ʃɪ:z,ɡɔnə'ɡeʔ'tʰɔ'dɔ.f] [bɪkʰɔð

/lok'ʃijz,ɡonə'ɡet'taw'dɔf+/ /bɪkoʔ²

"Look, she's going to get told off."

"Because,

[,bɪ'kʰɔʔ²ɔriʔ² 'bʊæɪ ʔə'dAɪnəʔ².]

/,bɪ'koʔ²ʃijz-'bræɪ-ə'dajnto:+/

"Because she's brung a dinosaur."

4. Mark and Tracy Gillard

T. ['læ?wänɪ' læ̃·ɪnən' læ?wän] M. ['ʔAgəʔä'dä . 'a.gÄ?ə'tʰɔʔɪ

T. /'lætwans' læjinon' lætwan+/ M. /+'ajgote'da? 'ajgote'toʃ

T. "That one's laying on that one." M. "I got a do- I got a

dag'ð.væʔv] ['maɪdæð~wəʊnlɛʔmɛɪ'æv, ɹɪn'dæɪwəʊnʔ]

dog'ajræv+/ /'maɪdæð-wəʊnlɛpmɪj'æv, aɹn'dæjwəʊnt+/

toy dog I have." "My Dad won't let me have one (?) they won't.

[wʊs'liʰs lɪs'jɛ: 'lɪɹɹ'jɛlɐʊ'botʰsʰu.] [

/wʊs'lɪs+lɪs'jɛ?'lɪl'jɛlɐw'botəw+/

"What's this? This ye- little yellow bottle?"

T. ['wʊslæʔ'liʔo·'gɛΔ'dəɪn' læə 'wʊsɛ'liʔɹɹ'gɛΔ'dəɪn' læə]

T. /'wʊslæt'litow'gel'duwin' læ:+'wʊsi'litil'gel'duwin' læ:+/

T. "What's that little girl doing there? What's the little girl

. M. ['hɔkɹ'ædʒɪ'gɛ̃ɐ'tʰɔp°ɹf]

M. /'hɔkən'æd(j)i'ge-ə'tɔpɔf+/

doing there?" M. "I can hardly get the top off."

['ɪnɪgæ'væniʔ] T. ['wɔslæʔ'dʒa:ɹəʊvə'lɛə]

/'fɪnɪgæ'rænɪt+/ T. /'wɔslæt'dʒa.rəʊvə'le:+/

"Vinegar, ainit?" T. "What's that jar over there?"

M. ['sæɪɔ̃ ʊ'nɪɹ] T. [ʔɪɪz'vænɪn'ɛ̃n:ɛɪ] ['ʔAʔgənəp°ɪʔ

M. /'sæjɔ̃ʊ'nɪn+/ T. /+ɪjz'rænɪn'ɛ̃nnɪj+/ /+'ajgənəpɪk

M. "Sage and onion." T. "He's running, ain't he?" "I'm

['kʰoolɛg ɹəʊ'aʔwənAgɛʔ· wɛnɪʔs'vɪfɪnʔə't'aʰɛm]

/'kowlɛsnəw'apwənajget?wɛnɪts'rintə'tajm+/

"going to pick all the snow up when I get, when it's winter-
time."

5. Deborah Cook ('The Three Pigs')

['p^hɪŋ³k⁷ 'māmēiddæd ~ 'mAm:əiəm'bæɪbəi] [ən'mærk^hɪnə'næʊs]
 / 'pɪŋk+ 'mami j' dæd- 'mammi jəm' bæjbi j+ / / ən'mæjki nə'næ:s+ /
 "Pink, Mummy Dad, Mummy and Baby. And making a house.
 [ʒɪ, sɛd[~]əɪ, ʒɛd^z ~ 'äɪstæɪ'hi.əmbɪɹd'maɪhæʊs 'jəʊgɛ't^səm
 / ʃɪ, sɛd-ɪ j, sɛd- 'aɪstæj'hi:əmbɪld'maɪhæ:s+ 'juwge'tom
 She said, he said, 'I stay here and build my house. You get on
 [wɪ'fɔqhæ:s] ['lesæə 'luk^x'ðɪswæn] ['vaɪt^s]
 / wɪ'fjohæ:s+ / / 'lesæ-ə 'luke'ðɪswan+ / / + 'raɪt+ /
 with your house'." "Let's have a look at this one. Right.
 [ðɪwə'vɔq^o'k^hæʊɪ:n ~ ðɛgɔ? ~ ə'bak^xɪt^s ~ ənsɪ't^sɔz'ɛn ~
 / ðɪwə'row'kæriɪn+ðe, got+ə'bakit+ənsəm'towz'ɛn+
 "They were all carrying. They got, a bucket, and some tools and
 [ənsɪ'p^hæɪn?t^s] [ʒo'jəʊk^hæʊeɪ'ɔnən'äbɪɹdmA : 'ʔÄŋgənə'bɪɹd^s
 / ənsəm'pæjnt+ / / +aw'juwkæri j'onən'ajbɪldmaɪ? 'aŋgənə'bɪld-
 and some paint. 'Oh you carry on and I build my - I'm going to
 [,mä·'hæʊs'ɔzɛst'hi:ən ~ ən'jəʊ'k^hæʊeɪ'hən] [wAɪt^s]
 / ,maɪ'hæ:s'ɔzɛst'hi:ən+ən'juwkæri j'hon+ / / + 'waɪt+ /
 build my house just here and- and you carry on. Right."
 [,lɪt^so·'p^hɪəg, lɪt^so·'p^hɪg ~ 'lɛ²t^smæɪ,k^ham'ɪn] [,nəʊ'nəʊ
 / ,lɪtow'pɪg-, lɪtow'pɪg+ 'let-mɪj,kam'ɪn+ / / ,nəw'nəw
 " 'Little pig, little pig, let me come in.' " 'No, no,
 [baɪə'hæzɔm:äɪ'tʃɪnɪɪ'tʃɪn ɪ tʃɪn'tʃɪn ɔ'væɪ?ðɪn]
 / baɪə'hæzommaɪ'tʃɪni j'tʃɪn-tʃɪn'tʃɪn+ ɔ'raɪtðɪn+ /
 by the hairs on my chinny chin- chin chin'. 'All right then,"

6. Paul Sheekey (Some Nursery Rhymes)

['wɪnʃeɪ 'ʃpaɪ,də ~ 'kɪA:mɪn'a?lʊ'əpæə ~ 'dæ:ŋ,kʰæɪnə'væɪn
/...!wɪnʃɪj'spaɪ,də+'klaɪmɪn'aplu'spæ:~ 'dæ:ŋ,kæɪnə'ræɪn+

"(Incey)-wincey spider climbing up the spout. Down came the

[ə'm'wɔʃdə'ʃpaɪdə'væɪ?] [dʒækʰən'dʒɪwɛn'ts'a?pɔɪ'ɪw]

/ə'm'wɔʃdə'spaɪdə'ræ:~+/ /'dʒækən'dʒɪlwen'tapɔɪ'ɪl+/

rain, and washed the spider out." "Jack and Jill went up the

[tʰu'fɛtʃə'pʰæ.ɹ'wɔ:tʰə ~ 'dʒækfɛɹ'dæ:næn'bɹɔʊkʰɪz'tʃæʊ

/tu'fɛtʃə'pæ:ə'wɔwtə+'dʒækfel'dæ:næn'bɹɔwkkɪz'tɹæɪn+

hill to fetch a pail of water. Jack fell down and broke his

['dʒɪwɪkʰəm'tʰamblɪn'ä:ɪ',ftə] ['äp dʒɛ?'gɔt'tʰən'ɛʊmɪ'tʃə?

/ 'dʒɪlkəm'tamblɪn'a:ɛftə+/ /'äp dʒek'gɔt'en'əwmdɪ'trɔt

crown, Jill came tumbling after. Up Jack got and home did trot,

['ʃfä:ʃə'zəɪkʰu'kʰɛɪpʰə ~ hɪ'wɛntʰə'bɛtʰə'mɛndʒ'ɪ'ʒɛdʰ

/əs'fä:sə'zɪjku'kæɪpə+hɪ'wɛntə'bɛtə'mɛndɪʒ'ɛd+

as fast as he could caper. He went to bed to mend his head

[wɪ'vɪŋɛ'væm'bʊæ'mpʰə]* [...!sæ?əŋə'βu ~ 'hamtʰəɪ

/wɪ'vɪnɪgə'ræm'bɹæ.mpə+/ / 'sætənə'wu+'hamptɪj

with vinegar and brown (pa)per." "... sat on a wall. Humpty

['damtʰəɪ'ædɛgʊæɪ?'fəʊ ~ 'ðɔnə,kʰɪŋʒ'əʊfɪʒæn'əʊnə,kʰɪŋʒ'mɛ.n

/ 'damptɪj'ædɛgræɪt'fəw+'əʊnə,kɪŋʒ'əʊfɪʒæn'əʊnə,kɪŋʒ'mɛn+/

Dumpty had a great fall. All the King's horses and all the

(Shane:)['kʰʊdɛn?p'əʊ'tʰamtʰəɪtʰə'tʰɪ'gɛvəpə,gɛn]

S. /'kudən?pu'tamtɪjtʊw'ge,və,rə,gɛn+/

King's men." S. "Couldn't put Humpty together again."

* Marked diminuendo on last two syllables

7. Carol Otterwell, Lorraine Beswick

C. [ðə'gærzdaʊn,lɛ? ~ lu'wæɪn'ɔɪ?næ?kst'ə'meɪ,ɒnə'flo:]

C. /ðə'gelzdəʊn,let-lu'wæɪn'sitneks-tə'mi,j,ɒnə'flo:+/

C. "The girls don't let Lorraine sit next to me on the floor."

[Ago?'steɪvɪn,ændə: ~ Ago?'ɛmən?smā:'frend]

/ajgot'stɪjvɪn,ændə:+ajgot'klemənt-smaj'frend+/

"I got Steven and er, I got Clement, (that)'s my friend."

[ɪ'wenɔk'xam'ɛʊmfəm'ɪskʊ: ~ A'pɪæɪwɪv,ə ~ 'ge?ððə'fəʊdʒ]

/ɪ'wenajkam'əʊmfom'skow+aj'plæɪwɪv,ə+'getʊðə'fuwd+/

"When I come home from school I play with her, get all the food"

L. ['Ago?'steɪvɪns'wɛr] C. [Alɔɪ?'bɔɪz]

L. /'ajgot'stɪjvɪn(ə)s'wel+/ C. /ajləjp'boɪs+/

L. "I got Steven as well." C. "I like boys."

[,Alæ?'steɪvən:ə'bestʰ] L. [,kʰɛz,kʰɛz,kʰɛzæɪ'pɪæɪwɪv,jə]

/ajləjk'stɪjvənne'best+/ L. /,kɛz,kɛz,kɛzæɪ'plæɪwɪv,jə+/

"I like Steven the best." L. "'Cause... they play with you."

~~"I like Steven"~~ [kʰæ'hæ?s ~ 'ɛn:æɪ'naʃtɪ] C. [mɑ'ɪnænzgo?'væ?

/kæts+'ennæɪ'nɑɪs+/ C. /maj'nænzgotə'ræt+

"Cats! Ain't they nice!" C. "My Nan's got a rat,"

[A'meɪnə'kʰæ? ~ ɛnɪ?'pɪæɪzwɪv'ɪ'boʊz] L. ['ʔAvgo?'ma.əs

/aj'mɪjnə'kæt+ænɪp'plæɪzwɪv'boʊz+/ L. /+'ajvgop'mɑɪs

I mean a cat, and it plays with balls." L. "I've got mice

[,dæn'steɪzɪm;ɔ'kʰabəðʒ~'ma.əs]

/,dæn'steɪzɪmmaj'kabəd+'maɪs+/

"downstairs in my cupboard, mice."

8. Paul Snellin ('Swimming Pool')

['2æi wæn? 'g^wiminmæ 'dæd^z ~ '2it^f en 'dai .y ~ 2eɪ 'dai ðo : fðe
/ + 'i jwent 'swiminmæ 'dæd + + 'i ken 'daj v + i j 'daj ðow fðe

"He went swimming, my Dad. He can dive. He dived off the

['sæk^h em 'boʊt] [A, dʒem? 'bæ^z k^x fpa n? ~ '2i : væ . '2edə 'wɔ : ʔ , a]
/ 'sæk em 'bowd + / / a j , dʒemp 'bæk - ffrant + 'i : 'ræ : tədə 'wɔwt , e + /

second board. I jump back-front, (here?) out of the water."

[jə 'næ^ʃ dæ? 'fɜ : ɪŋ] [ʔæ? 'fɜŋwɔ? : 'slai , dæn : 'ge^ʃ zənə 'wɔo?ə]
/ jə 'næw ðæt 'fiŋ + / / ðæt 'fiŋwɔtə 'slaj , dænən 'gewzənə 'wɔwtə + /

"You know that thing?" "That thing what (you) slide down and

[sɜ : 'slA : 2 'e^ʃvə^d jə 'vɛ^d]

/ sɛw 'slajt 'ewvəd jə 'red + /

(it) goes in the water, so it's right over your head."

[2A 'gɔŋk^x ədə 'wɔo . 2əvə?p ~ ʔɛz 'vɔ^l 'soʊsɪnə , wɔo?ə]

/ + a j 'grɔŋkɔwdə 'wɔwtəræp + ez 'ow 'soʊsɪnə , wɔwtə + /

"I drunk all the water up. There's all sauce in the water."

['2aŋz 'luk^x info : 'kræb ~ , jɛ : 'bɪk , kræb] ['na . ~ neu

/ + 'a j (w) uz 'lukinfo : 'kræb + , jɛ : 'bɪg , kræb + / / 'nəw + nəw

"I was looking for a crab. Yeah, a big crab. No, no

['kɹəke , dʌs ~ 'nɛuk[~] 'fiʃ]

/ 'kɹəke , daws + 'nəwk? 'fiʃ + /

crocodiles, no k- fish."

9. Tracy Pollard, Robby Goddard

T. ['2Aygəʔə'ga.əʔ,ʊmən] R. ['2Aɪ'gəʔə'gaɪ] [i'zɪ'fæt.2]~
T. /+ 'ajv'gotə'gajət,əwmən/ R. /ajv'gotə'gaj+its'fæt+
T. "I've got a guy at home and," R. "I've got a guy. It's fat.
[mA'fjətəmæɪ'dʒ'moɪn] T. ['Agəʔ'nɪleɪə'pʰæ.mfə,vēʔʰ]
/maj'fɪstəmæjɔ̃'mojn+/ T. /'ajgot'nɪlɪjə'pæ:mfo,rit+/
"My sister made mine." T. "I got nearly a pound for it."
R. [ɛɪv'vɛɪ'ɪgəʔə,pʰæ'ndʒ'fə,vɪʔ] T. ['Āgəʔ'ts'əü'pʰæ.ndɪmā'pʰɪg'ɪ
R./aju'redɪgotə,pæ:nd+fə,rit / T./'ajgottuw'pæ:ndɪmaj'pɪgɪ+
R."I already got a pound, for it." T."I got two pound in my
[sə'zɛə] R. ['aɪv'ʔ'fɪpɪ,pʰæ.nd] [ɛŋ'gɪʔɪnsəmt'sə'næʔ]
/sə'de:ʔ/ R /'ajgut'fɪɪj,pæ:nd+/ /əŋ'gɪtɪnsəmtə'najt+/
piggy. So there." R. "I got three pound. I'm getting some
['ɪz'ɔ̃'spa:ʔGəʔ] T. ['vəbeɪ,jəʊma.ʔ'ɪnAAʔh]
/4'ənsəm'spa:k(1)əʔ+/ T. /'robɪj,juwmaɪt'not+/
(bangers) tonight, and some sparklers." T. "Robby, you might not
[jə'vɔmɪd.ʔ'noʔ'ɪlɛʔjət'sə,næ.ʔʰ] R. ['2ædə'jɛɪ,nɜv]
/jə'rommaɪt-not-ɪletjətə,najt+/ R. /+ 'ædə'juw,nɜw+/
Your Mum might not let you tonight." R. "How do you know?"
T. [Ā'dʒ'əü,nɜv] R. [ʃəɪ'vɪɪ] T. [ʔəɪ,mæʔ'ɪnoʔʰ]
T. /+aj'duw,nɜw+/ R. /ʃɪj'rɪl+/ T. /ʃɪj,majt'not+/
T. "I do know." R. "she will." T. "She might not."
R. [ʃə'wɪɪ] T. [ʃəmə.ʔ'ɪnoʔʰ] R. [ʃə'wɪɪ]
R. /ʃə'wɪl+/ T. /ʃəmajt'not+/ R. /ʃə'wɪl+/
R. "She will." T. "She might not." R. "she will"

10. Janice Cook ('Cinderella')

[ʃeɪ'sæ?ə?ðə'faɪə ənd^{ts} ʒəɪ'kʰadʌdʌ'kʰɪ,tʰə.n
/ʃɪj'sæt-ətðə'fajə+ænd+ʃɪj'kadowdðə'ki,tən+/
"She sat at the fire, and, she cuddled the kitten.

['ʔuləvə's.a,də:n ə'fæ:vəɪ,kʰæɪmɔ̃',ɪn ǃ̃,səd'wähAdi'kɔ̃a:,ɪ
/+ 'uləvə'sa,dən+ə'fe:rij,kæjmd,ɪn+əd,səd'wajha:di'kraɪ,ɪn+
"All of a sudden, a fairy came in, and said, 'Why are you

[,sɪd:ə'vələ,səd[~]'kʰuzmɔ̃'sistəzwəʊn'le?mɔ̃i'cʰamtʰəðə'pʰAɪtʰɪ
/,sɪddə'relə,səd+'kuzmaj'sistəzwəʊn'lepɪmj'kamtəðə'pa:tɪj+/
crying?' Cinderella said, "'Cause my sisters won't let me come t

[sɪ,sɛd^z~.'ge?mɔ̃iə'pʰam?p,kʰɪ:"] [(sɛɣ'sɪndə,vələ[~]
/sɪ,səd+'gepmɪjə'pamp,kin+ /,səw'sɪndə,relə+
to the party.' She said, 'Get me a pumpkin'. So, Cinderella

['gɔ?thə:və'pʰæm?kʰɪn[~] ənd^{ts}əɪ'tʃærsɪ'tʰɪ'gɔdən[~]'kəʊtʃ]
/'gɔt-hə:re'pæmpkin+ændɪj'træjsɪ'tɪə'gawdən-'kəʊtʃ +/
got her a pumpkin, and he changed it in a golden coach."

[həɪ'sɛdtʰə,hɛɹ:~ nəʊ'ge?mɔ̃i'sɪks,lɪtʰo'li:zəds
/hɪj'sɛdtu(w),he:+nə:'gepmɪj'sɪks,lɪtow'li:zəds+
"He said to her, 'Now get me six little lizards,

[ænd^z'tʰɛn.əm,ɪntʰɪə[~]'mɛn ,sɛɣ'sɛndə,vələ'sɛd[~]
/ænd-'tɛnnəm,ɪntuw'mɛn+ +,səw'sɪndə,relə'sɛd+
and turn them into men. So Cinderella said,

[jəʊ'hævən?'gɔ?maɪ'dzɛs,jɛtʰɪs]
/juw'hævɛnt'gɔpɪmaj'dres,jɛt+/
"You haven't got my dress yet'."

11. Dawn Edmeade

[,dʒoʊd'ed~mei] ['sɪ2.t̃ēnə'brʌ,və 'wʌnɪn'ɪ2,t̃i: s ~
 /,dɔʊd'ed-,miʃ+ + 'sɪt̃t̃ə-ənə'brʌ,və+'wʌnɪn'ɪk,kla:s+
 "Dawn Edmeade." "Sister and a brother. One in this class,
 [2̃ēn'd̃em'avə,ʃ̃h̃eū d̃ɪn~ ɛ'navet̃iA. d̃ɛ'væɪnɪn'ɪ2,g̃'ōy]
 /ən'd̃em'avə,duw-in-ə'navet̃iA: + d̃ɛ'ræjɪnɪn'ɪk,gow+/
 and them other two in another class. They ain't in this school.
 ['s̃əmt̃h̃Amw̃ei'd̃j̃əūba2'tamsA²m. ,t̃h̃Amw̃ɪ'g̃əɪn]
 /'s̃əmt̃ajmw̃ɪj'duwbət'tamsajm?,t̃ajmw̃ɪ'g̃əwn+/
 "Sometimes we do but sometimes..... we don't."
 ['mɪ.s ~ 'mɪ2'mɪ2,t̃j̃o ~ 'mɪ2t̃j̃o] ['wʊ2d̃ɛj̃ə'ævfə'j̃ōə'br̃ɛ2
 /'mɪs-'mɪp'mɪt,tow+'mɪt̃t̃j̃ow+ / /'wʊt̃d̃ɛj̃ə-'ævfə'j̃o:'br̃ɛk
 "Miss, Miss Mitchell. Mitchell." "What do you have for your
 [,fɹ̃əθ.g̃t̃h̃] ['vɔ2,wʌp.d̃ɛj̃ə'lAɪ2d̃ə'b̃ɛ2t̃g̃] ['f̃añēf̃ɪŋ.ʃ̃]
 /,fr̃ɛst+ / /'vɔt,wʌn-d̃ɛj̃ə'laj̃t̃d̃ə'b̃ɛts+ + 'f̃añɪj̃f̃ɪŋs+
 breakfast?" "What one do you like the best?" "Funny things,
 ['f̃añɪ'm̃ɛj̃əŋθ ~ ,f̃añɪ'k̃ɪɛŋz̃] [,d̃j̃ē ~ 'w̃ē.2̃t̃ 'ɛvr̃ɪ2'd̃ɛɪ
 /'f̃añɪj̃'m̃ɛns+,f̃añɪ'kl̃ɛ:ns+ / /,g̃əw̃ə'w̃ɛ:k+'ɛvr̃ɪt̃'d̃ɛj̃+/
 funny mans, funny clowns." "Go to work, every day.
 ['t̃ɛɪə2'q̃ɪm ~ 'd̃əū.ñə't̃ɛɪ.ɪn'a²p'] [,w̃eɪw̃ɛn'ɛṽy.ə'm̃A'ñɛñz̃
 /'(s)t̃ɛj̃ət̃'əwm-'duwuñə'kl̃ɪ:rɪn'ap+ / /,w̃ɪj̃w̃ɛn'əw̃ṽə'm̃aj̃'ñɛns+
 "Stay at home doing the clearing up." "We went over my Nan's,
 ['m̃ā: ,br̃ʌṽə ~ 'g̃ɔ2ə~'b̃æñə,ænd̃'m̃aj̃'s̃ɪsɪ2, t̃ə~'æŋd̃'m̃aj̃'ṽəṽə ,s̃ɪs̃t̃ɛ
 /'m̃aj̃ ,br̃ʌṽə+'g̃ɔt̃ə-'b̃æñə+,ænd̃-m̃aj̃'s̃ɪs̃t̃, ə-'ænd̃-m̃aj̃'r̃əṽə ,s̃ɪs̃t̃ə+/
 "My brother got a banger, and my sister and my other sister."

12. Denise McDonnell (Her own story)

['wɛnʔsə'pɒʏnə'tʰ Å. ~ ,sɛiʒɪs'liʔo.'gɛv ɛn,ʃeɪəs ~ 'wɒkʰɪn
 /'wantʂə'pʉnə'tajm ,siʒðis'litow'gɛl+an,ʃij(w)əs-'wɒwkin
 "Once upon a time, see this little girl, and she was walking
 ['dæʒə'vɛv.m.,vɪvə'mam ,ʔænʃii,ʔɛd k'ɪnəsθ'swɛɪʔsɛnʔ,sɛd
 /'dænðə'rewmə,rivə'mam+,ænʃij,sɛd+kə'nəsəm'swiʒtsɛnʃə,sɛd
 down the Roman with her Mum, and she said 'Can I have some
 ['nɛ. ʔænʃʊs'fɛvəɪ'wɪndɛɪʔɛnʃɛɪ'tʰʊkʰə:kʰɛvʔʊfʃɛ
 /'nɛw+ænɪtus'fɛriʒ'wɪndɪʒ+ɛnʃij'tukə:'kɛwtʊfʃi
 sweets?' and she said 'No'. And it was very windy and she took
 ['ɪŋkʰ.ɪ'kʰʊʔə'kʰäɪtʰ ʃɛɪ'wɛnə'bɛ.ʔd
 /'ni:i'kɒwtə'kawd+ʃij'wɛnə'bed+
 her coat off, she nearly caught a cold. She went to bed, and
 [ʔɛnə:'mameɪ'wɛʔʔtʰə:'ha.ʔpʰ ʔænʃɛɪ'hæʔtʰə'gɛvə'skɒʔ
 /ɛnə:'mamiʒ'wɛwtte:'hap+ænʃij'hættə'gɛwə'skɒw+
 her Mummy woked her up and she had to go to school, but she
 [bɛʔʃɛɪ'dɪʔɛn'wɒnɛüʂɛvʃɛɪ'kɪ.Ä.dɪ'skɒʔʔʔ'dæɪ ~ 'hæne:'tʰɛɪtʃə
 /bɛt(-)ʃij'dɪtɛn'wɒnuwsɛwʃij'kraʒdɪn'skɒwɒ'dæj+'æne:'tɪʒtʃə
 didn't want to so she cried in school all day, and her teacher
 [,sɛ.d'jɛʏʃʊgɛv'ɛvʊm ʃɛvʃɛɪ'wɛn,ɛv.mʔɛntʔɛɪ'ʔɛdtʰʊɛ.,mam
 /,sɛd'juwʃʊgɛw'ɛwm+sɛwsɪʒ'wɛn,ɛwm+ɛndʃij'sɛdtʊɛ:,mam+
 said, 'You should go home'. So she went home, and she said to
 ['mÄɪtʰɛɪtʃə'sɛä.kʰɛŋ,gɛv'ɛv ʔɛv'dɛʒ,ʃɛɪ,ʃɛɪ,ʃɛd]
 /'maj,tɪʒtʃə'sɛ-ajkɛŋ,gɛw'ɛwm+'ɛw'dɪʒ,ʃij,ʃij,ʃɛd+/
 her Mum, 'My teacher said I can go home'. 'Oh, does she?' she
 said."

13. Dawn Price (Making a Graph)

[wēü 'gʊ̃.int^sə'dʒ̃.ə'gʊ̃Afbe? ~ ʔəs'mo: ,nin ~ 'jæ,læp² ,ðəs
 /wia:'gəwintə'duwe'gra:fβet+əs'mow,nin+'jæ,læp+,ðəs
 "We are going to do a graph, but, this morning, (Shut up! That's
 [wəʔa.'mɒsɪ] whispered['ɪʔt^swəzə'bæʊʔ,tɛləi'viʒən 'wɪ'mæɪdʒ'ʔ
 /wotaj'mɪjɪn+/ /+'it-wəzə'bæ:t,teli'viʒən+wɪ'mæjdət
 what I mean!) It was about television. We made it out of square
 [,ʧ.ʔəy'skwɛbɪʔs'p^hæɪʔ,gʌʔ'ʃɪ'ləɪnzɪnɪ? wəɪəm'd^wɔəd't^hə
 / ,æ:təv'skwɛbɪts'pæjk,got'ow'lajnzɔnɪt+wɪjəm'dro:d'tuw
 bits of paper got all lines on it. We, erm, drew two lines
 ['la.ɪns ~ 'heɪʔs'saɪd wəɪd^wɔ:d'wan't^hɪ.θeɪ'fɔ'faɪv
 /'lajns+'hiʃts'sajd+wɪj,dro:d'wan'tuw'θɪj'fo'fajv+
 each side. We drewed one, two, three, four, five, er right to
 [ʔɛ'vɛʔ:'væʔt^sə'faɪvɛnd,əm ~ 'hɛʔs'ɔəmweɪ,dʒəstəm'vɪʔ,æ.'meni
 /+θ'rajttə'fajvɛnd,əm+ats'o-əmwiʃ,dʒəstəm'rit,æ:'meni
 five and , erm, that's all, and we just erm writ how many
 [,nɪaɪʔdə'bestəs'p^oɛʃ,gʌm dɪ 'fa.ɪv ~ ,lAɪʔdə'maŋ,k^xɪz'fɔwa
 / ,lajtðə'bestəs'p(r)əw,g(r)əm+'fajv+,lajkðə'maŋ,kɪz+'fo: +
 liked the bestest programme. Five, liked the Monkees, four,
 ['lɪʔðəvə'dʒɪnɪ : 'wan,lAɪʔðəvə'dʒɪnɪ ɛn]
 /'lajkðəvə'dʒɪnɪ?'wan,lajkðəvə'dʒɪnɪən+
 liked the Virgini- One liked the Virginian,.and.one.liked
 [ɛnt^s'wɛən'nɪAəʔðə'landən'plæɪdɪ̃əm]
 /ənd-'wan'lajkðə'landən'plæjdɪəm+/
 and one liked the London Palladium."

14. Debra Garnes

[ændəməi'dʒædzə'lɒvɪ,dʒAɪvæ ʔəi,dʒæɪˈfə'kʰɪ.ləiən'tʰɒ.sən
/ændəmiɹ'dædzə'lɒriɹ,draɹvə+iɹ,draɹfə'ki:liɹən'tɒnsən

"and er my Dad's a lorry driver. He drives for Kearley and Tong

[ðæɪ,mæɪkʰoo'kʰæɹʔksˈənɦɪ'buɹɹsəm'ɛʊm] [ɦɪ,æstə'sləi'

/-ðæɹ,ɹpæɹkɒw'kæɹks-ənɦɪ'bruɹsəm'əwm+/ /+ɦɪ,æstə'sliɹ

and, they make all cakes, and he brings some home. He has to

[ˈpʰæʊʔ,lAɪkʰonə'dʒə:ɹəiənɪ'kʰæmbæʔðə'nɛʔks'dæɪ]

/ˈpæ:t,lAɹkɒnə'dʒə:diɹənɪ'kæmbækðə'neks'dæɹ+/
sleep out, like on a journey, and he come back the next day.

[ˈæs:ˈgɛ.ʊæ.ʔˈɛ:lɹiʔəm ˌsɛɪ ˈwɛnzdiˌmɒn.ɹɪ'kʰæmbæʔkʰ

/ˈæsəˈgəwæ:tˈə:liɹ-əm+,sæɹ+ˈwɛnzdiˌmɒnəɹɹ'kæmbæk-

"Has to go out early, erm, say, Wednesday morning, come back

[ˈθɛ:zdeɪh] [ɦɪɪ'stæɹzleɹʔkʰɪnɪs'hæ.əʊs ɛnɪs'læɹdeɪ

/ˈθə:zdeɹ+ /+ɦɪɹ'stæɹzleɹɹk'kɪnnɪs'hæ:s+ɛnnɪs'læɹdiɹ

Thursday." "He stays like in this house, and this lady puts

[ˈpʰæʔsɪm'aʔpˈwɪv'ɔˈlɪˈaveˈlɒvəɪ,dʒvA.ɪvəs ˌɦɪ,æɹtˈəpʰæɪ

/ˈpætsɪm'ap-wɪv'owliˈaveˈlɒriɹ,draɹvəs+ɦɪ,æz-təpæɹ

him up with all the other lorry-drivers. He has to pay seven-

[ˈsɛvənɛ'sɪʔksˌɪgɛʔsˈbˈɛʔfəs'dɹɪnə'tʰeɪ]

/ˈsevenən'sɪks+iɹgɛʔsˈbrekfəs'dɪnə-ˈtiɹ+/
and-six. He gets breakfast, dinner, tea."

15. Terry Sullivan

[wɪ'kʰa.nʔmɪ,kʰosʔəiʔʔä:liv'əvve'dɛ.ə.'lɔŋwæɪfʊm,ɪmən

/wi'ka:ntmi,kos-ɪj+'ajliv'əwvə'de:ə'lonwæɪfɹom,ɪmən

"We can't (play together) because he, I live over there, a long

['əɪsʔbrɪʔʔlæɪzɪdə'kʰamə.mɪ'æssə'æftə'kʰamjə:nd'ɪɪzæss]

/'ɪjsbit-'læɪzɪdə'kamə:mi'æsəw'æftə'kamrə:nd'ɪɪzæs+ /

way from him and he's bit (too) lazy to come round my house
so I have to come round his house."

[ʔä'dəy̥kʰam'naʔfə'jəy̥h] [ʔəɪʔ'mæd]

/+aj'duwkam'nokfə'juw+ / +ɪɪz'mæd+ /

"I do come and knock for you!" "He's mad."

[ʔəv'məɪə'nar,ʔɔ: ~ 'lA.,ʃɛ: ~ 'wɪ'jæden'ɛʔʔh ~ 'məɪə'nA,ʔɔo

/+əw'mɪjə'naj,ʔɔow+'la:,ʃɪ:+wɪj'æden'æt+'mɪjə'najʔɔow,dan

"Oh, me and Nigel, last year, we had an act, me and Nigel

[,dan ~ 'ɛɪwʊʔə'læ.ɪdeɪen'dū sə'mæ. ~ 'sɪndə,vələ~,ʔokʰə'fɛlə

'ɪɪwuzə'læɪdɪjən'ajwuzə'mæn+'sɪndə,relə+,rokə'fele+

done. He was a lady and I was a man. Cinderella, Rockefeller,

['pəzənɪ] [kʰəmwɛ'ɪ:wɔʔwɪl'sed,næ: ~ kʰamwɪ:ɪəʔowɪ'sɛd]

/'rəzənɪ+ +kəmwɪ'ɪ:wɔtwɪj'sed,næ:+kamwɪ:ɪ:wɔwɪ'sed+ /

wasn't it?" "Can we hear what we said now? Can we hear what
we said?."

16. Jill Williams, Lindsey Baldock (Some children's games)

J. [sɛiəm˘, sɛz˘ 'fɛ.vɪzənʒə 'wɒk hə 'væn ˘ 'wɛnʃsɛz˘ wɪtʃɪz βɛɪ

J. /sɪjəm-, sɛz- 'fɛ:rɪzənʒə 'wɒkə 'ræn+ 'wɛnʃsɛz˘ wɪtʃɪz wɪj

J. "She erm says 'fairies' and you walk around. When she says

[æɪt˘ə, vɒo˘ 'vʌnt˘ sʌ. 'vɛ. yʊm] L. [, bɛ, fɔ, ðə, læɪ, dɛɪ, k˘ əŋ 'gɛʒ əgən..

/ævtə, rɒw 'rʌntʌ: 'rəwm+ / L. /, bɛ, fɔ, ðə, læj, dɪj, kʌŋ 'gɛt əsən

'witches' we have to all run to our home" L. "Before the lady

[də 'vʌnɪəʔʃɛɪ 'gɛʔs ʔa:z ʔəʊ 'ɛvəðɛ ɪ 'pˈhɑ:ʔk nɔ˘ 'ɪz 'ɔnɪʔ]

/də 'vʌnɛtʃɪj 'gɛts+uwzʔuw 'ɛvəðɛ ɪ pɑ:kne+ɪz 'ɔnɪt+ /

can get us and... the one that she gets, whoever their partner,

L. [y˘, pˈæɪʔ. 'pˈhɛ.˘ s. tɔ˘ 'lɛʔ, æ ˘ , sɛɪjə 'sæ.ɪ ˘ ʔA. ɪ˘ 'sɛnt˘ ə

L. /wɪ, plæjə: 'pɔwstə 'lɛt, ə+, sɪjə 'sɛj+ɑj 'sɛntə

is on it." "We play er Post a Letter. See, you say, 'I sent a

['lɛt˘ sɔ˘ t˘ səʊm A˘ 'lʌvən˘ ˈæn: ə˘ wɛɪ A˘ d˘ ɔp, t˘ hɪ , æn˘ 'wɛn A˘ v˘ jɔʊz

/ 'lɛtə 'tuwmɑj 'lʌvən˘ ɔnne˘ wɛjɑj 'drɒp, tɪ+æn˘ 'wʌnɒv˘ juwz

letter to my Love and on the way I dropped it, and one of youse

[æb˘ 'pˈɪkt˘ ɪʔ 'apˈhɛm˘ 'pˈʊʔɪʔ 'ɪnʒə 'pˈhɛ.˘ k˘ ɪʔ ˘ ʔə. 'nɛn: æɪ˘ dʊʌpˈhɪʔ

/æb˘ 'pɪktɪt˘ 'apɛm˘ 'putɪt˘ 'ɪnʒə 'pɔ, kɪt+ə: 'nɛnnæj˘ 'drɒpɪtət˘?

have picked it up and put it in your pocket. Er, then they

[əʔ : bɪ˘ 'jɔɪn, sʌmbə, dɛɪ ˘ , ʔɛnd˘ ˘ 'dɛ. vɛnɪ˘ ˘ m: æɪjənɪ˘ ˘ əyɔwɛn

/ bɪj˘ 'ɑjn, sʌmbə, dɪj+, ɛnd+ 'de: rʌnɪn˘ 'ammæjʒənɪ˘ 'avəwɛn

drop it at, behind somebody, and, they're running one way and

['æstə, wʌm˘ 'vænɛnd˘ sɔ˘ 'dɪfɔʔ, wɛɪ]

/ 'æstə, wʌm- 'rænɛndə˘ 'dɪfrɛt, wɛj+ /

the other one has to run round in the different way."

18. Clifford North ('Firework Night')

[ʔæd'saɪmən ~ 'ba.ən.t̪s ~ hœ. ~ ɪ'kʰamʃt̪ə'ʃkūfɪzɪn:ɪ'ɪmpənʔs,əm
/+aʃæd'saɪmən+'ba:nts+ə:+ɪ'kamʃ-tə'skuɪzɪnnɪ'ɪmpənʔs,əm+

"I had Simon, Barnes. Er, he comes to school, he's in the infant

[æd'əʊbrɪ'gɑ,dɑd̪ ~ 'dæniən'səʒən ~ 'fɒstə. ~ 'næm.'maəm
/æd'robɪj'go,dɑ:d+'dæniən'suɪwən+'fɒstə+'næmə'mam+

erm, had Robby Goddard, Danny and Susan, Foster, and I had my

[mɪ'æn̪kʰʊ'dʒən.mɪ'aɪnʔ'pʰæʔ ~ 'ʔe.ɪlæyʰ ~ əmɑ'sɪstə'kʰɪ m]
/mɪ'æn̪ku'dʒonəmi'a:nt'pæt+'ɪʃlæj+əməj'sɪstə+'kɪm+/
Mum, my Uncle John and my Aunt Pat, Elaine, and my sister, Kim.'

[ʔæd'səm'gæmpʰæ:nd̪'ɪlɪt̪t̪əðə'fa. ~ t̪ɪ ~ p'x:
/'aʃæd'səm'gæmpʰæ:nɑj'ɪlɪt̪t̪əðə'fa:+/

"I had some gunpowder and I lit it at the fire (Rocket noises).'
[ä.f'gæ.əʔ'öylə'ɹɔkʰɪʔswən'af ~ ä'ɪɪʔɪʃ'ɹɔkʰɪn:ə'dæɪ.
/a:f'græjt'owlə'rokɪtswen'of+aʃ'ɪlɪtɪs'rokɪhɪnnə'dæj?
Half great, All the rockets went off. I lit this rocket in the

[d̪æ.ɪ,tsA.əmɪʔ'wɛn ʃ:ʃ bæ.əʔ'fɪftɪ'fəɪʔɪnɪ'hɑ.ɪ
/'dæj,tɑjɪt'wən....,bæ:t'fɪftɪ'fɪjtɪnɪ'(h)ɑj+/
day-time, it went shhhh, about fifty feet in the - high.

[ðæʔwəz.ə'gɹæɪʔɪs'wenɪmɑ'lɑɪf ~ ʔeʔ'fæwəʔ,nɑ.ɪ]
/ðætwezzə'græjtɪs'wanɪməj'lɑjf+ðæt'fæjəwət,nɑj+/
That was the greatest one in my life, that firework night."

[d̪æ.ɪ,tsA.əmɪʔ'wɛn ʃ:ʃ bæ.əʔ'fɪftɪ'fəɪʔɪnɪ'hɑ.ɪ
/'dæj,tɑjɪt'wən....,bæ:t'fɪftɪ'fɪjtɪnɪ'(h)ɑj+/
day-time, it went shhhh, about fifty feet in the - high.

[ðæʔwəz.ə'gɹæɪʔɪs'wenɪmɑ'lɑɪf ~ ʔeʔ'fæwəʔ,nɑ.ɪ]
/ðætwezzə'græjtɪs'wanɪməj'lɑjf+ðæt'fæjəwət,nɑj+/
That was the greatest one in my life, that firework night."

[d̪æ.ɪ,tsA.əmɪʔ'wɛn ʃ:ʃ bæ.əʔ'fɪftɪ'fəɪʔɪnɪ'hɑ.ɪ
/'dæj,tɑjɪt'wən....,bæ:t'fɪftɪ'fɪjtɪnɪ'(h)ɑj+/
day-time, it went shhhh, about fifty feet in the - high.

[ðæʔwəz.ə'gɹæɪʔɪs'wenɪmɑ'lɑɪf ~ ʔeʔ'fæwəʔ,nɑ.ɪ]
/ðætwezzə'græjtɪs'wanɪməj'lɑjf+ðæt'fæjəwət,nɑj+/
That was the greatest one in my life, that firework night."

[ðæʔwəz.ə'gɹæɪʔɪs'wenɪmɑ'lɑɪf ~ ʔeʔ'fæwəʔ,nɑ.ɪ]
/ðætwezzə'græjtɪs'wanɪməj'lɑjf+ðæt'fæjəwət,nɑj+/
That was the greatest one in my life, that firework night."

"That was the greatest one in my life, that firework night."

19. Elaine Baker (An Accident)

['fjɛ. ~ ,səiə'nɪs'bɔ: ~ 'ʔeɪəðə,bɪʔəgə'lA.s ~ ən,rɪsɛ'dakʰən
/ 'jə: + ,sɪjə'nɪs'bɔj + 'ɪjəðə,bɪtəgə'lɑ:s + ən,ɪjse'dakən

"Yeah. See, and this boy, he had a bit of glass, and he

[ʊ'dɪʔən'ɜ:ɪmænd ~ ʔɪʔ'wɛnɪmɑr'ɛd ~ A'æʔt'əgə'aʔɔər
/ ʌj'dɪtən'ɪ:ɪmænd + ɪt'wenɪmɑj'ed + ʌj'ætəgəw'apɔɪj

said 'duck' and I didn't hear him and, it went in my head. I

['ɔs.prɪʔ, ʌo ~ nAɛd'fɪpəɪ'stɪdʔɪz ~ 'dɜʔ'stɛr.
/ 'ɔsspɪt, ɔw + (ə)nəjəd'frɪj'stɪdʔɪz + 'dɪt'stɛj + /

had to go up the hospital, and I had three stitiches. I didn't

['wɛm: ʌ. 'mamwənə, wɛʔ ʔ; 'wem: ʌ. 'mam ~ 'wɛnnt'səðə'wɛrʔən, ɪʔ
/ 'wemmaj'mamwənə, wɛʔ'wemmaj'mam - 'wɛnəntəðə'wɛjtɪn, rəm +

stay. When my Mum went... into the waiting-room, I started

[A'stA.ʔədʔ'kɪdʔ, ɪn ~ 'wɛnɛr'wɛnʔt'sə'gɪvməɪə'nəɪdʔɔ.as:
/ ʌj'stə:təd'kraɪ, ɪn + 'wɛnðɛj'wɛnttə'gɪvmɪjə'nɪjdəwəɪsʔ

crying. When they went to give me a needle I s - I said 'No,

[ʔəsɛd'ne. ʌ, dʔɪʔən'wɛnɪʔʔ] [mɔ. 'nɛnsbɪnɪn'ɔsbɪʔ ~ 'wɛʔnʔs
/ ʌjsəd'nəwəɪ, dɪtən'wɔnɪt + / / mɑj'nɛnsbɪnɪn'ɔspɪtu + 'wɔnts +

I didn't want it. " "My Nan's been in hospital, once.

[fɪə'lɔŋ, tʰAəm'bɛʔ ~ ,fɔ. 'wɛɪʔks'sa.nʔ, lAʔ, ðæʔ]
/ frə'lɔŋ, tɑjm'bɛ:t -, fɔ: 'wɪjks'sant, lɑjk, ðæt + /

For a long time, about, four weeks, something like that."

20. Kathleen Bye, Russell Kilden (Making a Guy)

K [A'gA?sen'tsæ:zəzən, A' 2æ'ript°ap'hö'ny.zp°æip'həsənA

K /aɪ'gotsən'træ:zəzən, aɪ+ə'riptapow'nuzpæjpəsənəɪ+

K. "I got some trousers and I, er, ripped up all newspapers and

['pʰy?əmɪnə'tsæ:zɪzənə'tAɪdə?.'tʰAɪdæ:nɪə'bə?·məðɛ:'legs]

/ 'putəmɪnə'træ:zɪzənəɪ'taɪdæp?'taɪdræ:nne'botəmæðe:'legs+ /

I put them in the trousers, and I tied... round the bottom of

[mæ'mam, ɛA?mɛit'sə'mæɪ?ðə'bəd'səɪ ~ ɛ, bəʊ?·'mAsk, fə·ɪf?]

/mi'mam, elpmɪjtə'mæjkðə'bodɪj+aɪ, bəwtə'ma:sk, fə:rit+ /

their legs. My Mum helped me to make the body. I bought a
mask for it."

R. [mɪ'legzwuz'mæɪdæ:ʔəv ~ mæ'tʰɪ:ɪv'ɒv ~ , ʔumə'tʰvɪv

R. /mi'legzwuz'mæɪdæ:təv-mæ'ti:riɔw+, ume'tɪrɪl

R. "My legs was made out of material, all material stuffed

['stɑftɪnɪ ~ mɪ'bədəwuz'mæɪdæ?·'pʰæɪ?bə ~ ʔəβəɪ'ɛɪ'd ~

/ 'stɑftɪnɪ+mɪ'bədəwuz'mæɪdæ'tə'pæjpə+əmɪj'ed+

in it. My body was made out of paper, and my head, was made

[wɔɪ'mæɪdæ·ʔə'pʰæɪ?bə ~ ɛnə, mæɪdæ'mā:s ~ ʔɪt'segə·v'ɒvɒvɪ?]

/wuz'mæɪdæ:tə'pæjpə+ənəɪ'mæɪdæ'ma:s+itəgəw'əwvɪt+ /

out of paper, and I made a mask, er to go over it."

21. Jenny Carnegie ('The Snow Queen')

['ðis 'mædʒɪk mædʒɪfən ~ əd 'mæɪdə, glɑ:s 'mɪr.ɪz ~ ənt^s ~ ɪ 'tʰaɪdr.
/ 'ðis 'mædʒɪk mædʒɪfən + əd 'mædʒə, glɑ:s 'mɪr.ɪz + ənd + i 'tawdow

"This magic magician had made a glass mirror, and, he told

[,lɪz d 'p'ɦɪksɪznd ~ 'wɪk^hɪg 'gɒblɪnz t^segə . 'flā:ap^həŋðə 'ēə
/ ,lɪz - 'pɪksɪzənd - 'wɪkɪg 'gɒblɪnz təgə? 'flɑjapəndə - 'e:

all his pixies and wicked goblins to... fly up in the air

[wɪv, ɪ? ~ ənd wəndæ:ɪ? 'kɹæft^sən ~ 'bɪtsgɔ? 'ɪnt^sə 'p'ɦɪp^hɪz
/ wɪv, ɪt + ənd 'wəndæjɪk 'kræft - tən + 'bɪtsgɔt 'ɪntə 'pɪjpɔwz

with it. And one day it crashed, and bits got into people's

['ä:tsən 'aɪzəm 'wängɹ? 'ɪnt^sək^h: 'lɪ?ɔ? 'k^hæɪzər ~ 'mæ. dæmsɪ
/ 'a:tsən 'aɪzəm 'wängɔt 'ɪntək? 'lɪtəw 'kæjzəj + 'mæjdæmsɪj

hearts and eyes, and one got into little Kay's eye, made him

['ævru:fɪŋ² 'k' bæd^ɪ ~ ənd ɹə, təŋgɹ? 'ɪnt^səɪz 'A: ?ðə? 'mæɪdɪ?
/ 'ævru:fɪŋk 'bæd + ənd rə + ,əŋgɔt 'ɪntu wɪz 'a: tðəp 'mæjdɪt

see everything bad. And, er, one got into his heart that made

['t^s ɛ:nt^s ə ə 'læmp^həv 'aɪsənd ~ 'wændæɪ wəŋðə. əz ~ 't^h ʌɔk^hɪn d
/ 'tə:ntə - ə 'læmpəv 'aɪsənd + 'wəndæj wəndæjəz - 'təwkin -

it turn to a lump of ice and, one day, when they was talking,

[ən 'lʊk^xɪnə?ðə 'rəvzɪz ~ 'ʔɪɪ, nɔ?kt^səm 'ɔf. ən 'sɛd:æ^ɛ wəz 'sɪləɪ
/ ən 'lʊkɪnə tðə 'rəwzɪz + 'ɪj nɔktəm 'ɔf - ən 'sɛdðæj wəz 'sɪlɪj /

and looking at the roses, he knocked them off, and said they
was silly."

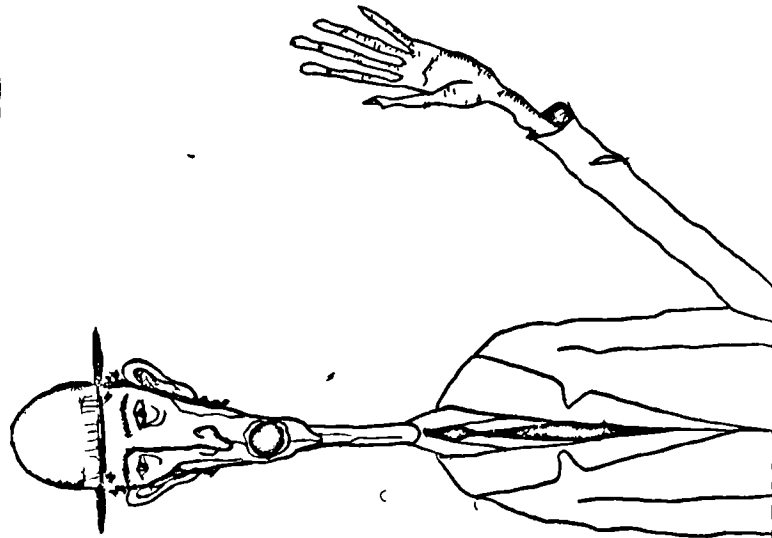
22. Diane Allen, Jeanette Leigh ('Lost in Space')

[ɜː ʃɔː 'fæɪəʔ 'pɜːvɜːm dʒə 'neɪ] J. ['lɒs tɪn 's pæɪs]
D. /sʃɔː 'fæɪvrəp 'prəʊgræm dʒə 'neɪ/ J. /'lɒstɪn 'spæɪs+/
D. "What's your favourite programme, Jeanette?" J. "Lost in
D. [ʔɪːz 'pʰeɪpʰʊ 'wɛnə 'pʰɔŋə 'mɔ̃ʊn] J. [.... 'mɔ̃ʊn ~ næɪ 'kɪæ.ə ʃ]
D. /+ɪʃz 'piʃpu 'wenəp 'pɒndə 'muwn+/ J. /.... 'muwn+næɪ 'kræɪ+
Space." D. "These people went up on the Moon." J. "...Moon, and
[əndə 'sɔːʔsəθɪŋz 'æ,pʰɛn] D. [ʔə.mɔ̃ə 'bɔɪ.ənɪsɪs
/əndʊ 'sɔwtəθɪŋz 'æ,pən+/ D. /+ ,əmdə 'boɪənnɪs
they crash, and all sorts of things happen." D. "Erm, the boy an
['mæ.ŋkʰʊ 'dɔːkt̪ə ,smɪf ~ 'ðæɪgɔː 'kʰɔ̃ʊʔwəðɪs. ~ 'mɒnʔ ,stə]
/'mæŋku 'dɒktə ,smɪf+ 'ðæɪgɒk 'kɔwtwəðɪs- 'mont ,stə+/
this man called Doctor Smith, they got caught with this,
J. ['ðɪsəm. ~ 'θɪŋɛnəm ɹɪ 'bɔɪz 'fAɪvə ,kæmə 'lɒŋ
J. /'ðɪsəm- 'θɪŋənəm+ 'boɪz 'fɑːvə ,kæmə 'lɒŋ
monster." J. "This erm, thing, and erm, (the) boy's father
[wɪʔə 'gænn̩ 'mɒnʔstə 'dɑːɪd̪]
/wɪvə 'gænənnə 'montstə 'dɑɪd+/
come along with a gun and the monster died."

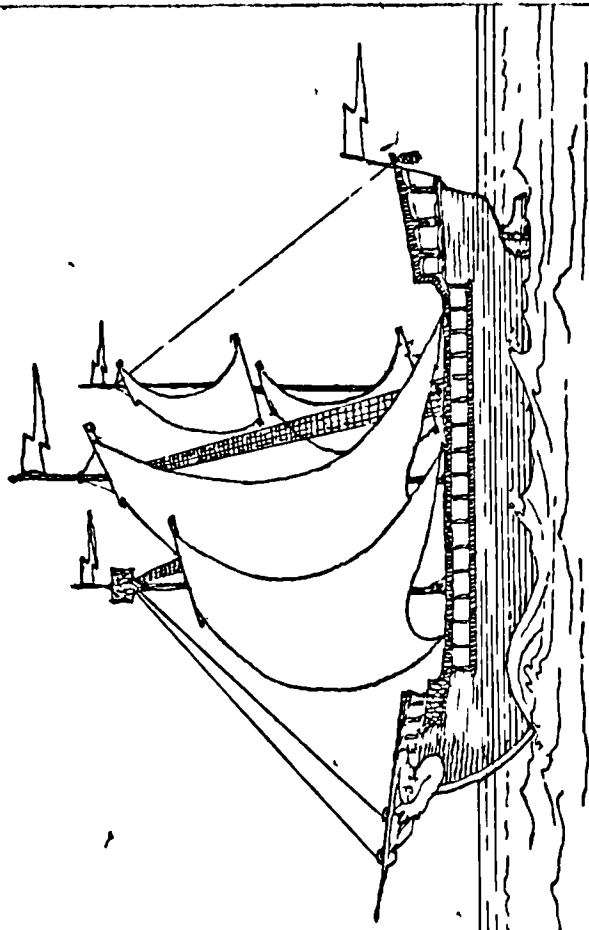
APPENDIX C

SPECIMENS OF PICTURE-CARDS USED IN THE TEST OF SPEECH-SOUND
DISCRIMINATION

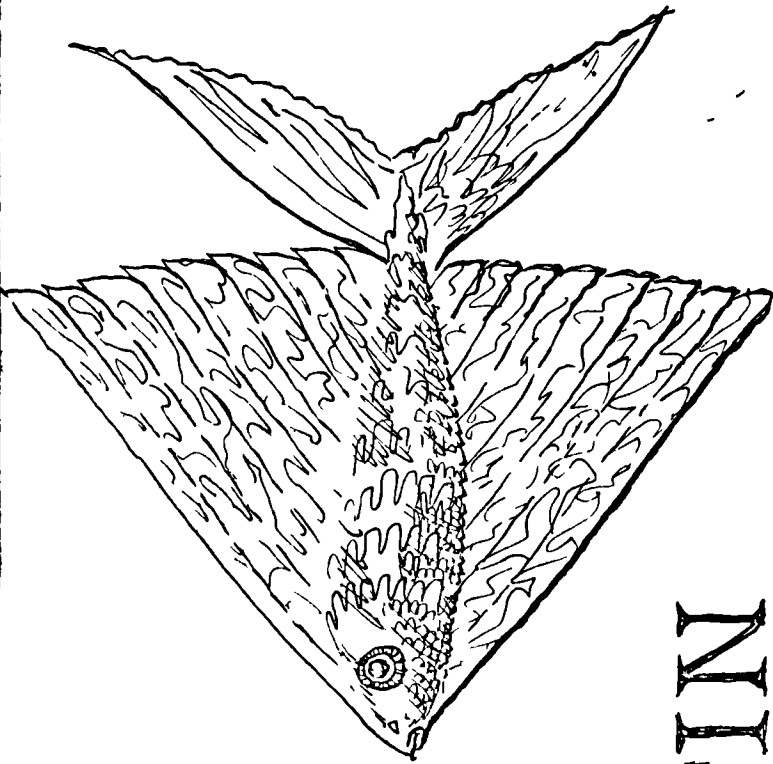
Designed by Malcolm Smith



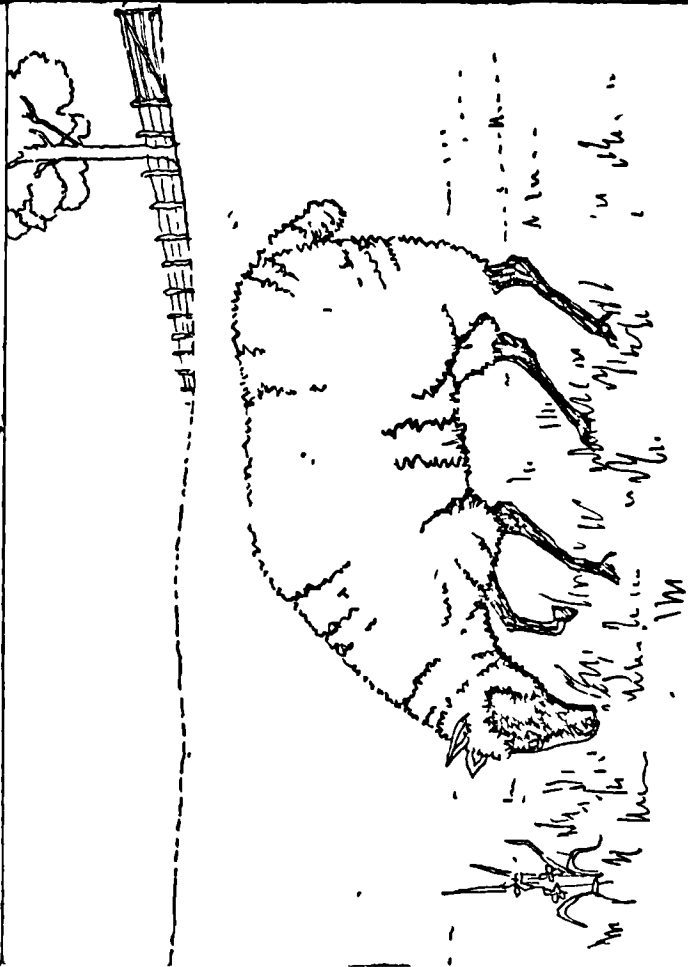
THIN



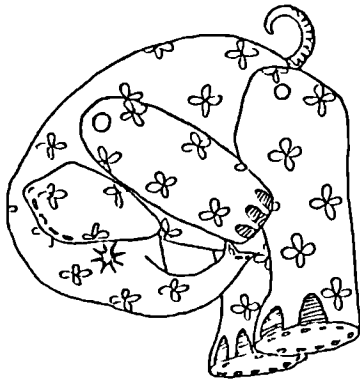
SHIP



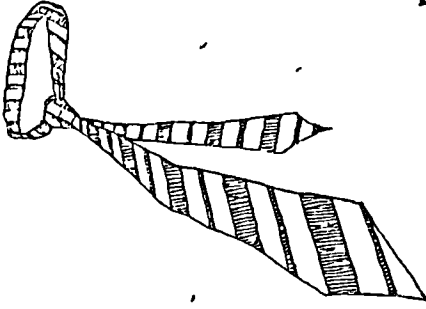
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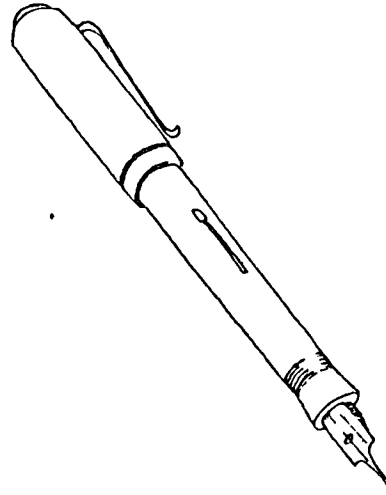
SHEEP



TOY



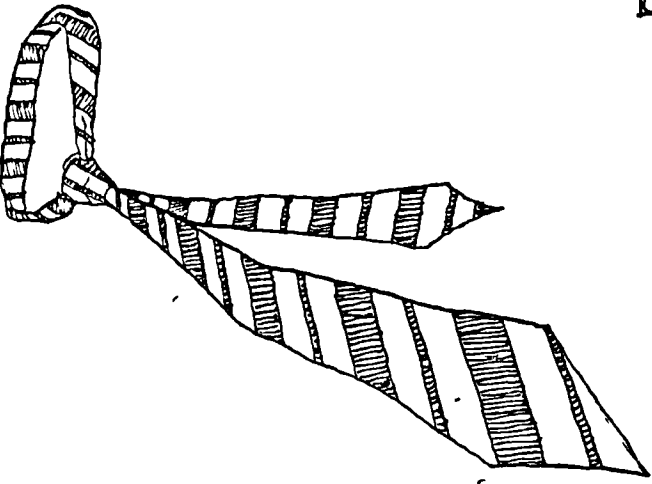
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PEN



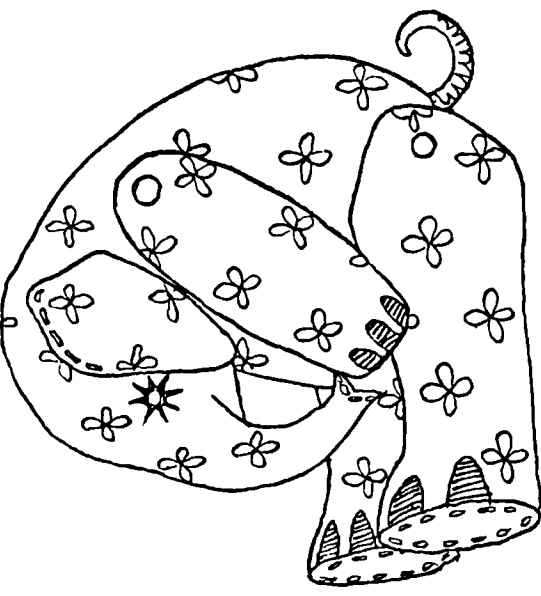
OWL



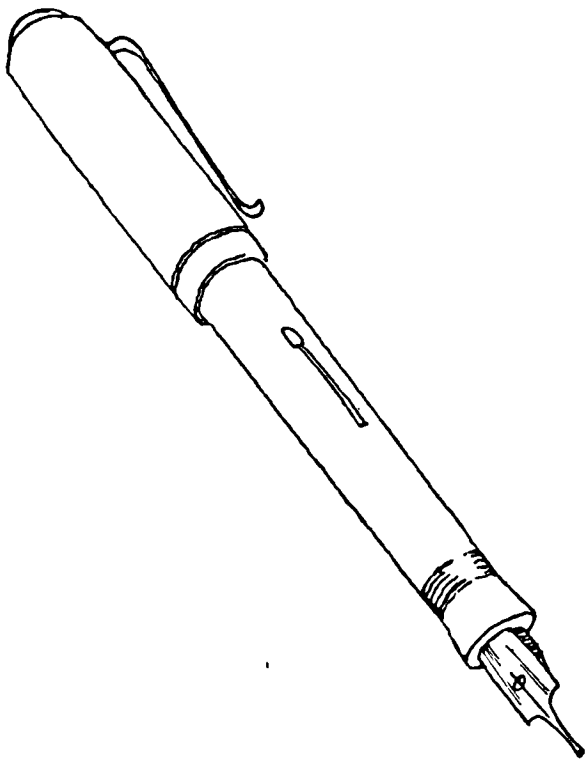
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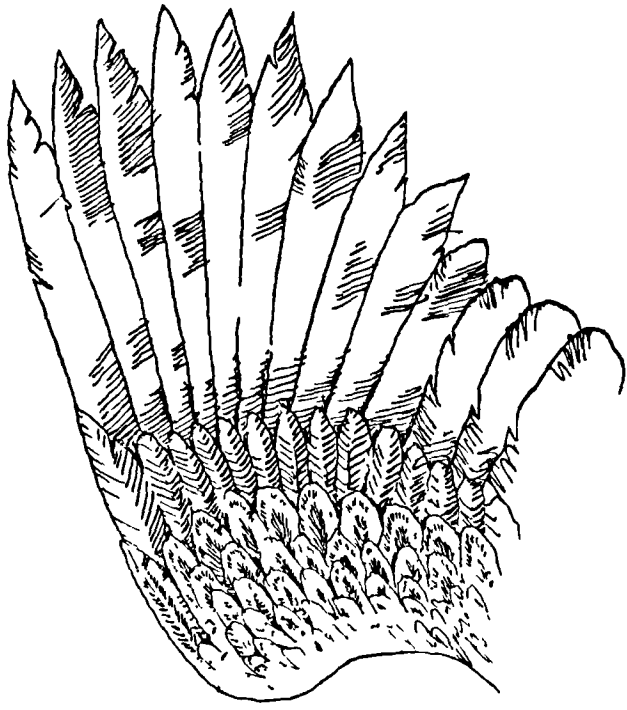
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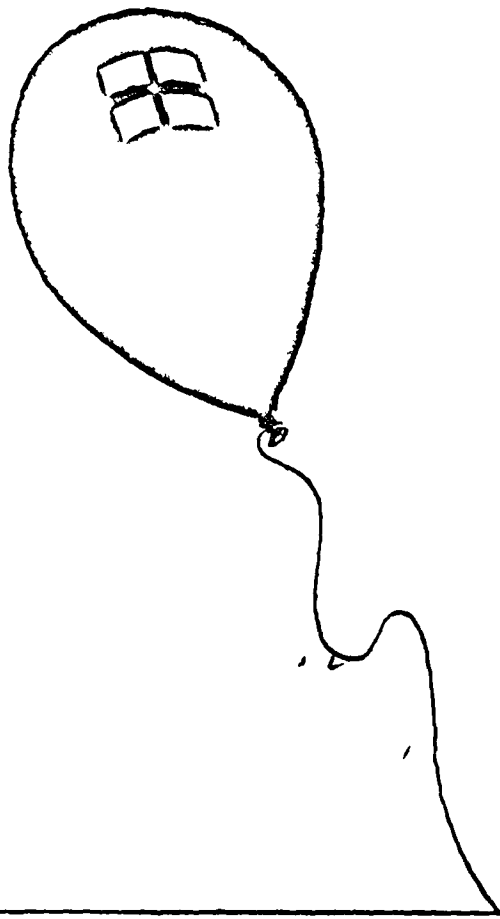
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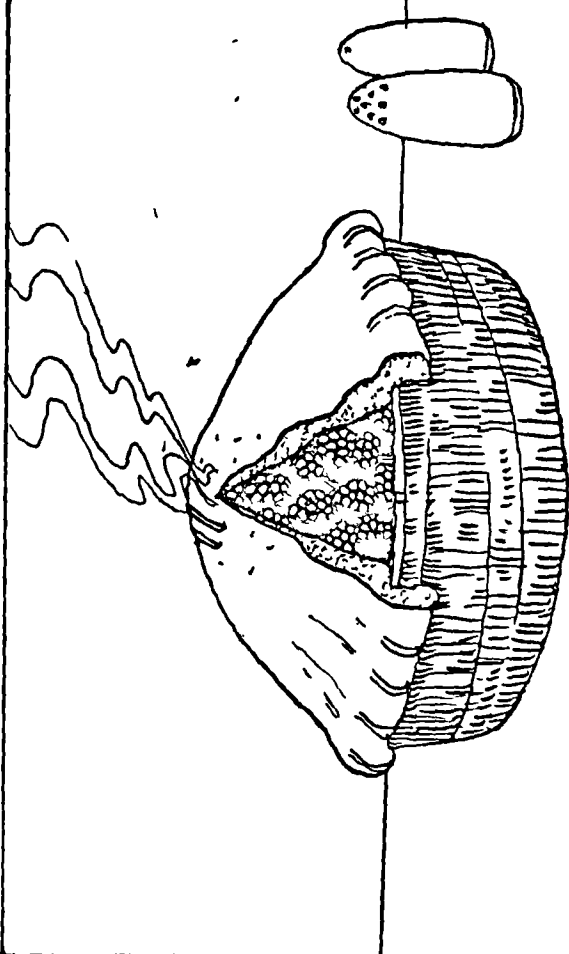
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WING

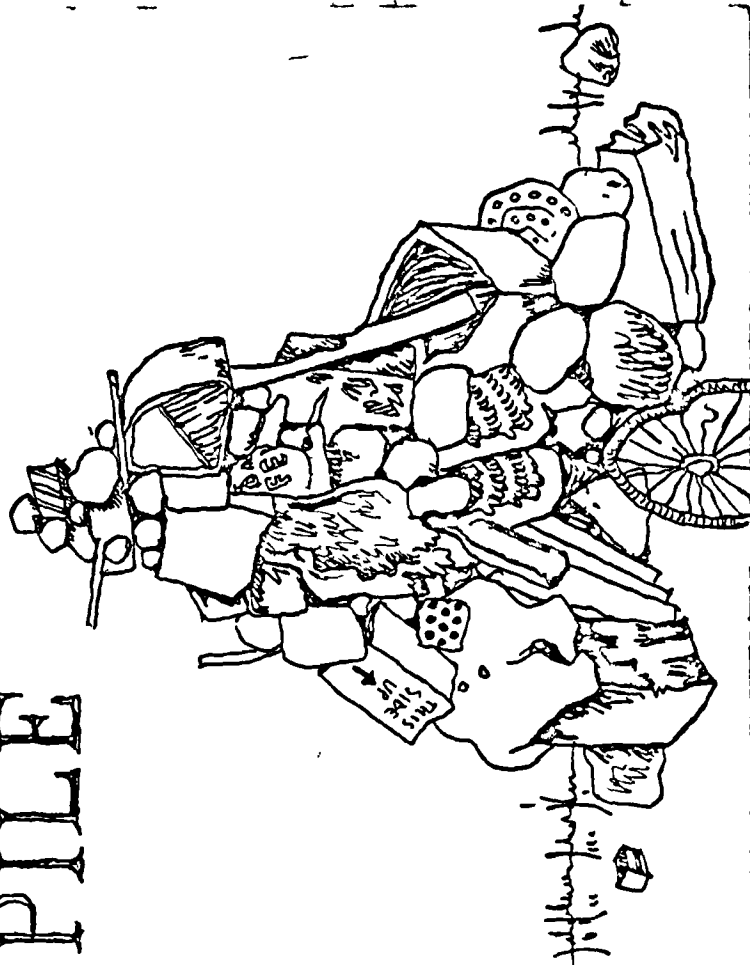


BALLOON



PIE

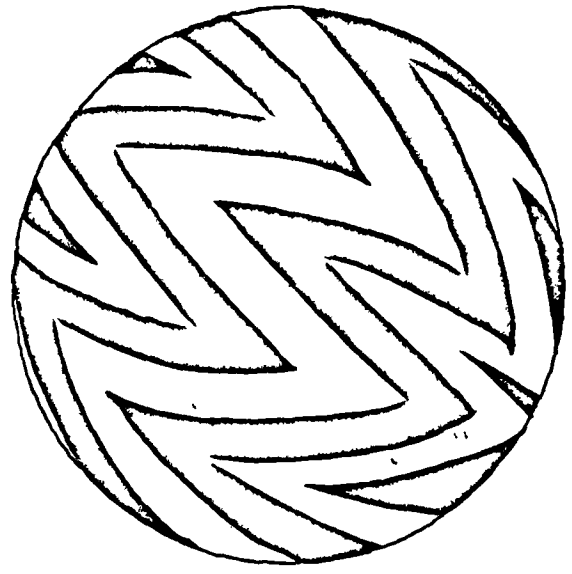
PILE



Handwritten text in the top-left corner of the Bull quadrant, possibly a signature or date.



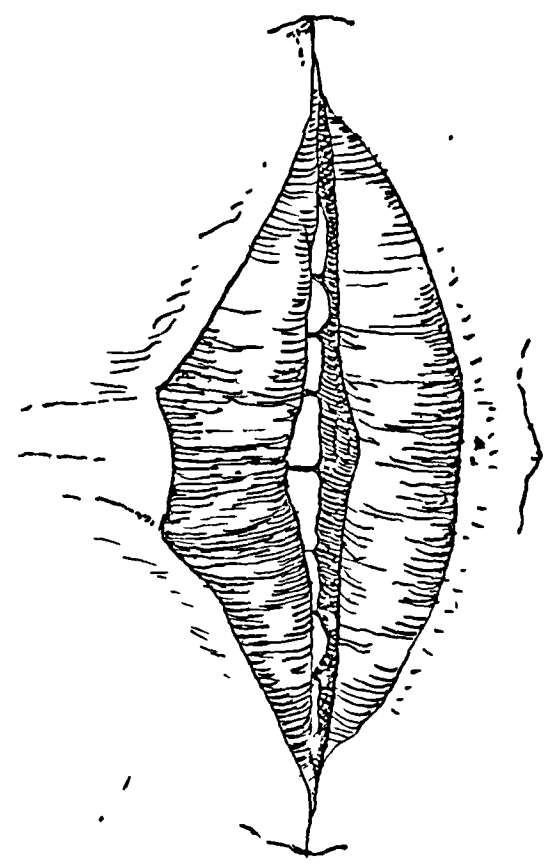
BULL



BALL



MOUSE



MOUTH

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